HP IP Console Viewer
User Guide

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Part Number 409053-001

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Audience assumptions

This document is for the person trained in network software administration and who understands concepts like TCP/IP, NTP, NFS, DNS, directory services (such as Active Directory and LDAP) ,and asynchronous serial communications.

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Product overview

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HP IP Console Viewer overview

The HP IP Console Viewer is a cross-platform management application that enables you to view, control, and group console switches and the servers and network devices that are attached to them.

The HP IP Console Viewer:

- Ensures compatibility with most popular operating systems and hardware platforms
- Provides secure authentication, data transfers, and user name and password storage
- Provides directory-based authentication with Microsoft® Active Directory by using LDAP
- Places system control at the point of need

The HP IP Console Viewer enables you to install, discover, configure, and operate the following products:

- HP IP Console Switches
- HP Serial Console Servers (referred to as serial console switches in the HP IP Console Viewer)
- Interface adapters
  - USB 2.0 with Virtual Media
  - PS2 with Virtual Media
  - PS2
  - USB
  - Serial
  - HP Bladesystem CAT5 KVM

System components

The HP IP Console Viewer consists of the main window, Video Session Viewer, Serial Session Viewer, and the Manage Console Switch window.

Main window

The HP IP Console Viewer utilizes a Microsoft® Windows® Explorer-like navigation with an intuitive split-screen interface, providing you with a single point of access for all your servers. From the HP IP Console

Viewer, you can easily perform tasks, such as installing and managing KVM console switches, installing and managing serial console switches, launching a Video Session Viewer to a server or launching a telnet/SSH session to a server. Built-in groupings, such as Servers, Sites, and Folders, provide an easy way to view select console switches, serial console switches and servers. You can also create custom groupings of console switches, serial console switches, and servers by adding folders that store shortcuts. Additional groupings are provided based on the custom fields that you assign.

From the main window, you can select a server from a Unit list and then click an icon to launch a session to it. You can also select a console switch and then click an icon to launch management and control functions.

Video Session Viewer

The Video Session Viewer enables you to control the keyboard, video, and mouse functions of individual servers. You can also use pre-defined macros for the server.

The Video Session Viewer can be launched to servers on the following console switches:

- HP 2 x 1 x 16 IP Console Switch with Virtual Media [PN: AF601A]
- HP 4 x 1 x 16 IP Console Switch with Virtual Media [PN: AF602A]
- HP 1 x 1 x 16 IP Console Switch [PN: 262585-B21]
- HP 3 x 1 x 16 IP Console Switch [PN: 262586-B21]
- HP 2 x 16 Server Console Switch with Virtual Media (when tiered and integrated with an HP IP Console Switch using a CAT5 cable) [PN: AF600A]
- HP 1 x 8 Server Console Switch (when tiered and integrated with an HP IP Console Switch using a CAT5 cable) [PN: 336044-B21]
- HP 2 x 16 Server Console Switch (when tiered and integrated with an HP IP Console Switch using a CAT5 cable) [PN: 336045-B21]
- Compaq legacy analog switches (when attached to an interface adapter)
  - 1 x 4 [PN: 400336 (-001)(-291)(-B31)]
  - 1 x 8 [PN: 400337 (-001)(-291)(-B31)]
  - 2 x 8 [PN: 400338 (-001)(-291)(-B31)]
  - 2 x 8 (48 VDC) [PN: 400542-B21]

Serial Session Viewer

The Serial Session Viewer enables you to establish serial sessions with individual servers that support telnet or SSH. You can configure user preferences for all sessions and session properties for each server. The Serial Session Viewer offers a scripting function for automatic server login and a logging function for saving session data to a file. The console switch settings indicate whether SSH or plaintext (non-encrypted) sessions (or both) are allowed.

The Video Session Viewer can be launched to servers on the following serial console switches:

- HP 16-Port Serial Console Server
- HP 48-Port Serial Console Server

Manage Console Switch windows

Each Manage Console Switch window is implemented as a network management module that supports a console switch. The Manage Console Switch window contains tabs, and each tab represents a top-level function category for the console switch. For example, the Manage Console Switch window tabs might be Settings, Status, and Tools. The number and content of tabbed panels differs for each console switch.

Features and benefits

- Ease of installation

  Auto discovery of managed console switches enables you to locate and install new console switches. An installation wizard simplifies the task of initial configuration, and an online help application is available to assist you with installation tasks.

- Ease of configuration

  The HP IP Console Viewer has an intuitive GUI-based configuration with tools to load and save managed console switch-based configuration tables and managed console switch groupings user tables.

- Ease of update

  The HP IP Console Viewer contains easy-to-use tools to initiate flash upgrades, distribute database files, and back up and restore managed console switch-based configurations.

- Ease of management

  The HP IP Console Viewer enables you to add and manage multiple console switches and servers in one system. After a console switch or server is installed, you can configure the console switch parameters, launch, share or preempt user video sessions, and execute numerous control functions. From the intuitive Manage Console Switch window, you can enable SNMP traps, configure target servers, cascade console switches, and manage user databases.

- Increased customization capabilities

  The HP IP Console Viewer can be customized to meet your specific needs. Unit names, field names, icons, and macros can be customized for maximum flexibility and convenience.

- Virtual Media capability

  The HP IP Console Viewer enables you to map a mass storage device or a CD/DVD drive on the local computer as a virtual drive on a target server. You can also add and map an .iso or floppy image file on the local console switch as a virtual drive on the target server.

- Increased capacity

NOTE: The HP IP Console Viewer database is designed to store up to 25 managed console switches and up to 1,024 target servers (devices). If more units are added, performance may decrease.

Each managed KVM console switch supports up to 64 internal user accounts and has client support for multiple simultaneous user sessions, depending on the model:

- 1 x 1, where one remote user session is supported
- 2 x 1, where two remote user sessions are supported
- 3 x 1, where three remote user sessions are supported
- 4 x 1, where four remote user sessions are supported

Each managed serial console switch supports up to 64 internal user accounts and can support client sessions for all ports simultaneously.

- Increased security

  The HP IP Console Viewer provides secure managed switch-based authentication, data transfers, and user name and password storage. With multiple levels of access control, Admin and User, you can set server device-specific access rights and inter-operate with existing firewalls, VPN, and NAT-based networks.

- Serial console switch support

  The HP IP Console Viewer enables you to install and manage serial console switches. You can also launch a Serial Session Viewer to view connected serial devices.

Directory services integration (LDAP)

Directory services integration, or LDAP, offers the following features and benefits:

- Authenticates and authorizes users from a shared database
- Controls user privileges (A user can be disabled globally with one change.)
- Enables users to use their domain credentials
- Does not require manual password synchronization when the user password is changed in the directory (It is changed everywhere.)
- Manages access controls from a single administration point

Supported operating systems

- Microsoft® Windows® 2000 Workstation Service Pack 4
- Microsoft® Windows® 2000 Server Service Pack 4
- Microsoft® Windows® XP (Home and Professional) Service Pack 2
- Microsoft Windows™ Server 2003 Service Pack 1
- Red Hat Enterprise Linux 3.0 WS
- Red Hat Enterprise Linux 4.0 WS
- SUSE Linux Enterprise Server 8
- SUSE Linux Enterprise Server 9
- SUSE Linux 9.2
- SUSE Linux 9.3

IMPORTANT: To ensure that you have the latest software, see the HP website (http://www.hp.com/go/kvm).

Browser requirements

- Microsoft® Internet Explorer 5.5 or higher (Microsoft® Windows® operating systems only)
- Mozilla 1.4 or higher
- Netscape 6.0 or later
- Firefox 1.0 or later

Supported directory services

Microsoft® Active Directory on:

- Windows® Server 2000
- Windows Server™ 2003

System requirements

The following is a list of the hardware and browser requirements for running the HP IP Console Viewer on the supported operating systems. Configurations with less than the recommended requirements are not supported.

- 500-MHz Intel® Pentium® III processor

- 256 MB RAM
- 10 or 100–BaseT NIC (100 recommended)
- XGA video with graphics accelerator (minimum)
- 800 x 600 desktop size (minimum)
- 65, 536 (16-bit) colors (recommended)

Installation

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Setting up the HP IP Console Switch

Before installing the HP IP Console Viewer, see the following sections to be sure that you have all the items necessary for proper installation and that you synchronize your mouse pointers.

1. Adjust the mouse acceleration on each server to none.
2. Install the console switch hardware, connect the interface adapters, and connect the keyboard, monitor, and mouse to the analog ports.
3. Connect a terminal or a workstation running emulation software, such as HyperTerminal, to the configuration serial port on the rear panel of the console switch, and set up the network parameters. You can also set the network parameters from the HP IP Console Viewer, or the OSD on an HP IP Console Switch with Virtual Media.
4. Using the local analog workstation, input all server names through the OSD, or you can change the server names of the interface adapters through the Manage Console Switch window.

Synchronizing your mouse pointers

When viewing a server attached to your console switch, the viewer displays the mouse pointer of the accessed server and the mouse pointer for your local computer by default. The pointer for the server follows the movement of the local pointer. To maintain pointer synchronization, the mouse speed and accelerations must be configured correctly on the target server.

Before beginning, synchronize your mouse pointers through the local port, on servers attached to console switches.

NOTE: HP recommends that all Windows® systems attached to the console switch use the default Windows® mouse driver.

Windows operating systems

To synchronize the mouse pointers for Windows® operating systems (using the default drivers):

1. From the desktop, select **Start>Setting>Control Panel,** and double-click **Mouse.**
2. Select **Motion.**
3. For Windows® 2000, set the Speed setting to **50%** (default) and the Acceleration setting to **None.**

-or-

For Windows Server™ 2003, set the Speed setting to **50%** (default), and clear the **Enhance Pointer Precision** option.

Linux operating systems

NOTE: The following Linux example uses Red Hat 3.0. For more information, refer to your Linux operating system's HELP or documentation.

To synchronize the mouse pointers for Linux operating systems (GNOME):

1. Click the **main** menu.
2. From the main menu task list, select **Programs>Settings>Peripherals.**
3. From the Peripherals task list, select **Mouse.** The Mouse Configuration window appears. In this window, you can set the mouse to be either right-handed or left-handed and adjust the mouse motion by changing the threshold and adjusting the acceleration to the fourth position from the far left.

To synchronize the mouse pointers for Linux operating systems (KDE):

1. Go to the main menu, and select **K Menu>KDE Control Center>Input Devices>Mouse.**
2. Set the acceleration to **1X.**
3. Apply the settings, and click **OK.**

Establishing LAN connections

To connect an HP IP Console Switch to a network:

NOTE: Although 10Base–T Ethernet can be used, HP recommends a dedicated, switched 100Base–T network (or better) for improved performance. HP IP Console Switches with Virtual Media are capable of 1G.

Connect the network cable from the LAN port on the rear panel of the HP IP Console Switch to the network, and then power on all attached systems. The following ports must be open on your network, for both UDP and TCP protocols, for the HP IP Console Viewer to work properly:

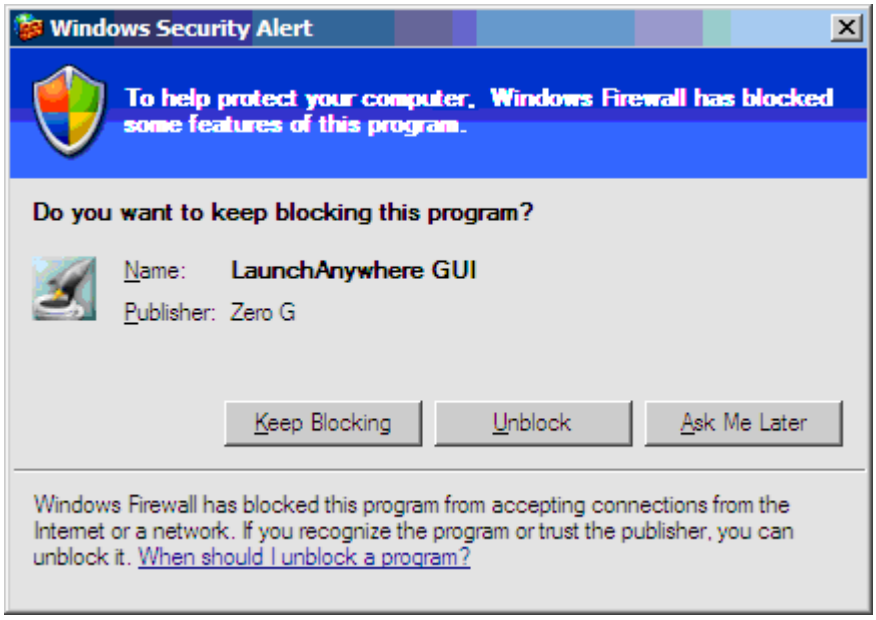
- 2068
- 8192
- 3211
- 161
- 162
- 389 (LDAP)
- 636 (secure LDAP)

Windows XP SP1 or newer

To add a console switch without a preconfigured IP address and when the client software application is not listed in the Windows® XP Firewall Exceptions List, the program must be added to the list of Windows® XP Firewall Exceptions, and its scope must be set to the whole Internet.

NOTE: When installing the HP IP Console Viewer on a Windows Server™ 2003 server, if you do not get a security dialog box and the installation program stops, you might need to restart the server to get the security dialog.

NOTE: At the program startup, if you select Unblock, unblock is the default setting.


Windows Security Alert
To help protect your computer, Windows Firewall has blocked some features of this program.
Do you want to keep blocking this program?
Name: LaunchAnywhere GUI
Publisher: Zero G
Keep Blocking
Unblock
Ask Me Later
Windows Firewall has blocked this program from accepting connections from the Internet or a network. If you recognize the program or trust the publisher, you can unblock it. When should I unblock a program?

Data Execution Prevention
Data Execution Prevention (DEP) helps protect against damage from viruses and other security threats. How does it work?
Turn on DEP for essential Windows programs and services only
Turn on DEP for all programs and services except those I select:
InstallAnywhere Self Extractor
InstallAnywhere Self Extractor
Your computer's processor does not support hardware-based DEP. However, Windows can use DEP software to help prevent some types of attacks.

Installing the HP IP Console Viewer

IMPORTANT: To ensure that you have the latest software, see the HP website (http://www.hp.com/go/kvm).

To install the HP IP Console Viewer on Windows® operating systems:

1. Insert the HP IP Console Viewer CD in to the CD-ROM drive. If AutoPlay is supported and enabled, the setup program starts automatically.

   -or-

   If your system does not support AutoPlay, set the default drive to the CD-ROM drive letter, and execute the following command to start the install program:

   `<CD-ROM drive>:\WIN32\SETUP.EXE`

2. Follow the on-screen instructions.

To install the HP IP Console Viewer on Linux operating systems:

1. Insert the HP IP Console Switch Viewer CD into your CD-ROM drive.
   - If you are using Red Hat and SUSE Linux, the CD mounts automatically. Proceed to step 2.
   - If the CD does not mount automatically, issue the mount command manually. The following is an example of a typical mount command:

     `mount -t iso9660 device_file mount_point`

     Where `device_file` is the system-dependant device file associated with the CD and `mount_point` is the directory that is used to access the contents of the CD after it is mounted. Typical values include `/mnt/cdrom` or `/media/cdrom`.
2. Open a command window and navigate to the CD mount point. For example, `cd/mnt/cdrom`.
3. Enter the following command to start the installation, `sh ./linux/setup.bin`.
4. Follow the on-screen instructions.

Launching the HP IP Console Viewer

- To launch the HP IP Console Viewer on all Windows® operating systems, select **Start>Programs>HP IP Console Viewer.**

  -or-

  From the desktop, double-click **HP IP Console Viewer.** The HP IP Console Viewer launches.
- To launch the HP IP Console Viewer on Linux operating systems:

  If the product was installed in the default install directory (/usr/lib/IPViewer), then execute the following command from a shell:

  `./IPViewer`

  -or-

  If the product was installed in a directory other than the default, then execute the following command from a shell:

  `<path>/IPViewer`

  -or-

  From the desktop, double-click **HP IP Console Viewer.** The HP IP Console Viewer launches.

Configuring the HP IP Console Viewer

IMPORTANT: To ensure that you have the latest software, see the HP website (http://www.hp.com/go/kvm).

1. Install the HP IP Console Viewer on each HP IP Console Viewer client.
2. From one of the HP IP Console Viewer clients, launch the HP IP Console Viewer.

3. Click **New Console Switch** to add the new console switch to the HP IP Console Viewer database. The New Console Switch wizard appears.
4. If you previously configured the IP address, select **Yes, the product already has an IP address.** You are prompted to provide the IP address of the console switch and complete the wizard.

   -or-

   If you did not configure the IP address, select **No, the product does not have an IP address.** You are prompted to assign an IP address, network mask, and gateway. The HP IP Console Viewer finds the console switch and all interface adapters, or ports (for serial console switches), attached to it. These names appear in the HP IP Console Viewer main window.
5. (Optional) Add additional console switches.
6. Set properties and group servers as desired into Sites or Folders through the main window.
7. Configure the console switch for access by clicking **Manage Console Switch.**

   When prompted for login credentials, login using the Override Administrator User name (Admin). The password is not set on new console switches. Remember to set the Override Admin Password and keep it secure.

   If local authentication is to be used select the User category and configure user names. For information on adding internal users, see "Configuring user accounts (on page 42)" or "Configuring user accounts for serial console switches (on page 108)."

   If LDAP is to be used for authentication and authorization the console switch must be configured to access the directory server. For information on configuring LDAP Authentication, see "Using directory services integration (on page 182)."

   Serial console switches can be configured for internal authentication, LDAP authentication, and also RADIUS authentication. For more information, see "Configuring authentication parameters for serial console switches (on page 99)."
8. After one HP IP Console Viewer client is configured, select **File>Database>Save** to save a copy of the database with all the settings, and then share the file so that it can be loaded.
9. From the second HP IP Console Viewer client, select **File>Database>Load,** and browse to find the file you saved.
10. If interface adapters are added, moved, deleted, or renamed after you loaded this file, resynchronize your local database with the console switch by clicking **Manage Console Switch,** selecting **Settings>Servers,** and clicking **Resync.**
11. To access a server attached to your console switch, select the desired server in the main window, and click **Launch KVM Session** to launch a server session.

    -or-

    To access a server attached to your serial console switch, select the desired server in the main window, and click **Launch Serial Session** to launch a server session.

    If SSH is enabled on the serial console switch to which the selected server is connected, then HP IP Console Viewer automatically launches a secure session using SSH2. If SSH is not enabled, then a plaintext Telnet session launches. If both SSH and plaintext sessions are enabled, then you are prompted to select between launching an SSH or plaintext session, and are given the option to save your preference for future sessions launched during this HP IP Console Viewer session. To clear your preference select the **Tools>Clear Login Credentials** menu option.
12. Adjust the resolution by selecting **View>Auto Scale,** and click **Maximize.** Select **Tools>Automatic Video Adjust** for the server video in the **Video Session Viewer.**
13. After setting the mouse properties, click **mouse synchronization** in the HP IP Console Viewer menu bar.

Navigating the HP IP Console Viewer

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HP IP Console Viewer components overview

The HP IP Console Viewer consists of several components: the main window, the Manage Console Switch window, the Video Session Viewer component, and Serial Session Viewer component. After you launch the HP IP Console Viewer, the main window appears. The main window enables you to view, access, manage, and create custom groupings for all the supported units in the data center.

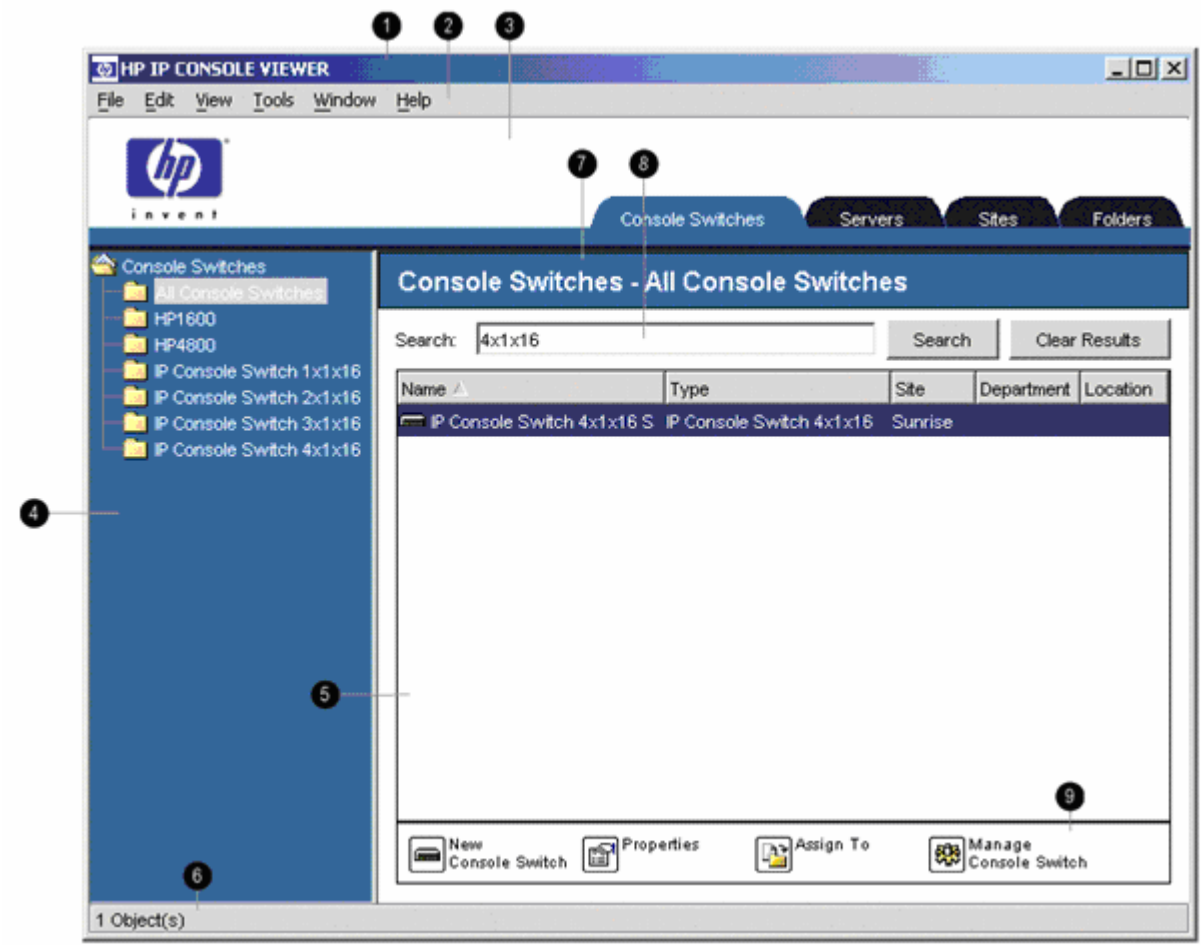
When you select a server, you can click **Launch KVM Session** in the main window to launch the Video Session Viewer. This component enables you to control the keyboard, monitor, and mouse functions of individual servers. If the target device has a connection to a serial console switch, click the Launch Serial Session icon to establish a telnet or SSH session to the target.

When you select a console switch, you can click **Manage Console Switch** in the main window to launch the Manage Console Switch window. This window enables you to configure and control the console switch.

Viewing the main window

The main window is divided into several different views. These views change based on the type of servers selected or the task you want to complete. Click one of the views to see your system organized by categories, such as console switches, servers, sites, or folders. The default display for the main window can be configured by the user. By default, each time you launch the main window, it reads the local database to determine which view to display.

Main window features



Position	Feature	Function
1	Title bar	Provides the title of the HP IP Console Viewer
2	Menu bar	Contains six menus (File, Edit, View, Tools, Window, and Help)
3	View Selector tabs	Contains four tabs (Console Switches, Servers, Sites, and Folders)
4	Group view	Contains a tree view representing the groups that are selected from the tab view (The group view also controls what appears in the selected view.)
5	List view	Displays a list in the currently selected group view or the results of a search executed from the search bar
6	Status bar	Displays the number of items shown in the list view
7	Selected view	Displays the search bar, list view, and task window
8	Search bar	Enables you to filter the list view displayed in the selected view, based on the text entered

Position	Feature	Function
9	Task window	Contains buttons representing tasks that can be executed (Some buttons are dynamic, based on the type of items selected in the list view, and other buttons are fixed and always present.)

Auto searching for a server in the list view

1. Click **Servers,** and click any item in the List view.
2. Begin entering the first few characters of a server name. The highlight moves to the first server name beginning with those characters.

   To reset the search so you can find another server, pause for a few seconds, and enter the first few characters of the next server.

Searching for a server in the local database

1. Click **Servers.**
2. Insert your cursor in the Search text box, and enter the search information.
3. Click **Search.**
4. Review the results of your search.

   -or-

   Click **Clear Results** to display the entire list again.

Adding and discovering console switches

In this section

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Managing multiple connections 31
Server naming 32
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Adding console switches

Before a console switch can be accessed through the HP IP Console Viewer, you must add it to the HP IP Console Viewer database. After the console switch has been manually added or discovered, it appears in the list view.

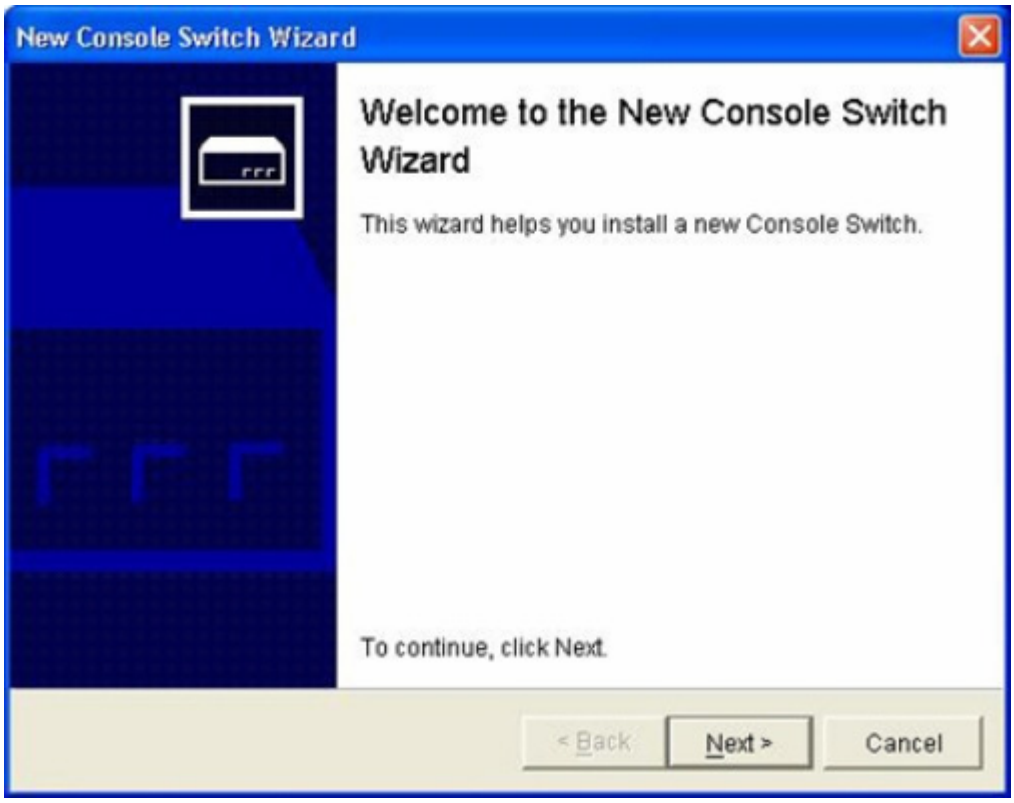
If an IP address has already been assigned to the console switch, the HP IP Console Viewer automatically discovers it by searching for an exact IP address or an address range. If an IP address has not yet been assigned, you must manually add the console switch. If you are installing multiple console switches, HP recommends using the Discover Wizard. If you are installing a single console switch, HP recommends using the New Console Switch Wizard.

NOTE: For KVM console switches, HP recommends that you assign names to the target servers in the console switch OSD before adding them to the HP IP Console Viewer. For serial console switches, the server name should be configured on the associated serial console switch port using the CLI. For more information, refer to the documentation included with the serial console switch.

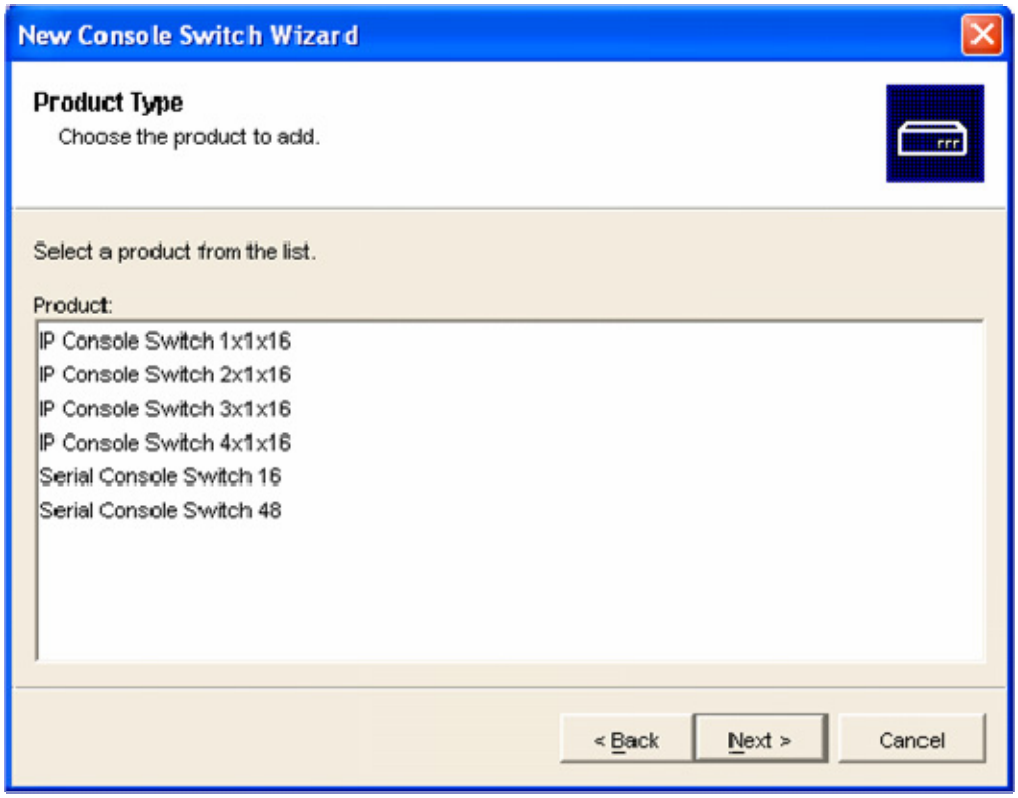
Adding a console switch without an assigned IP address

1. Select **File>New>Console Switch,** or click **New Console Switch.**

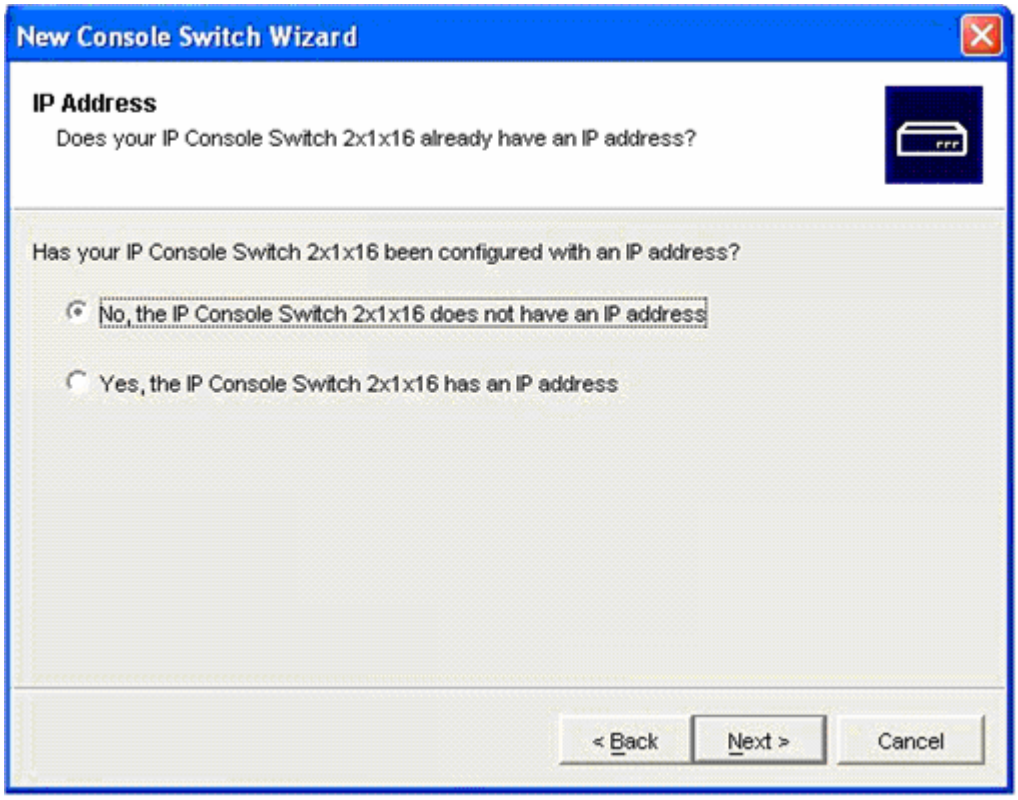
The New Console Switch Wizard appears.


New Console Switch Wizard
Welcome to the New Console Switch Wizard
This wizard helps you install a new Console Switch.
To continue, click Next.
< Back
Next >
Cancel

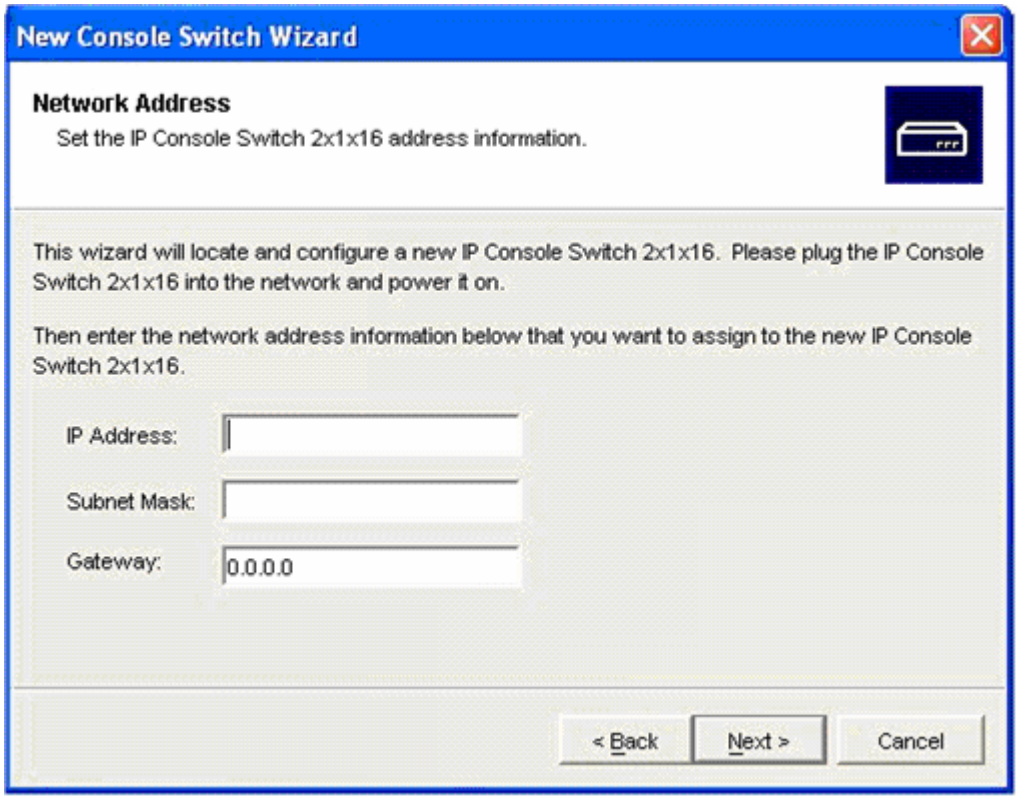
2. Click **Next.** The Product Type window appears.



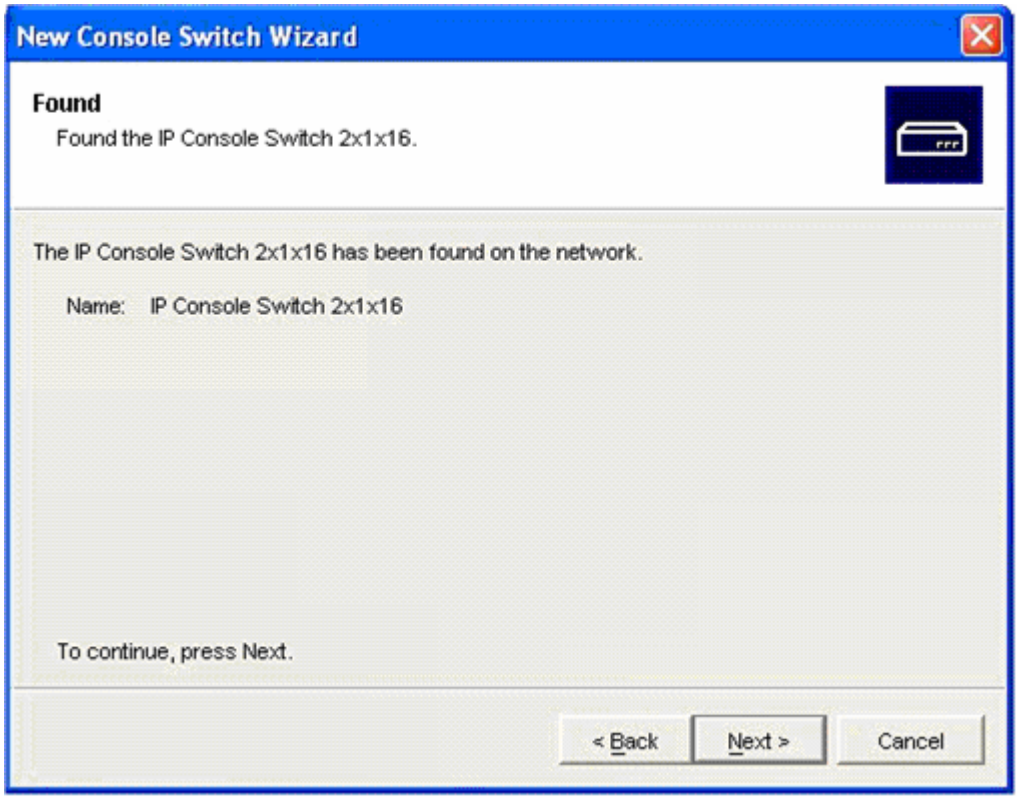
3. Select a product from the product list. The IP Address window appears.


New Console Switch Wizard
IP Address
Does your IP Console Switch 2x1x16 already have an IP address?
Has your IP Console Switch 2x1x16 been configured with an IP address?
No, the IP Console Switch 2x1x16 does not have an IP address
Yes, the IP Console Switch 2x1x16 has an IP address
< Back
Next >
Cancel

4. Indicate that the HP IP Console Switch does not have an IP address assigned by selecting **No,** and click **Next.** The Network Address window appears.


New Console Switch Wizard
Network Address
Set the IP Console Switch 2x1x16 address information.
This wizard will locate and configure a new IP Console Switch 2x1x16. Please plug the IP Console Switch 2x1x16 into the network and power it on.
Then enter the network address information below that you want to assign to the new IP Console Switch 2x1x16.
IP Address:
Subnet Mask:
Gateway:
0.0.0.0
< Back
Next >
Cancel

5. Enter the IP address, subnet mask, and gateway for the console switch, and click **Next.** The HP IP Console Viewer searches for the console switch and interface adapter IDs and server names associated with the particular console switch. The Found window appears.


New Console Switch Wizard
Found
Found the IP Console Switch 2x1x16.
The IP Console Switch 2x1x16 has been found on the network.
Name: IP Console Switch 2x1x16
To continue, press Next.
< Back
Next >
Cancel

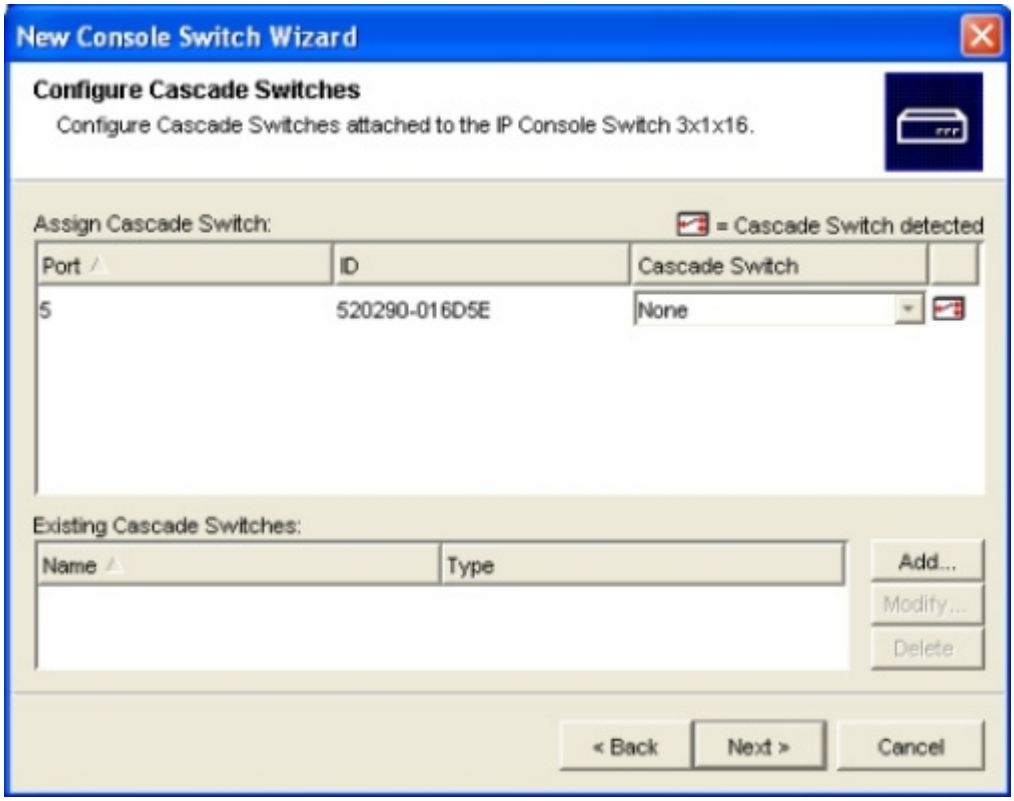
6. Click **Next.** If a cascade legacy analog console switch attached to an interface adapter is detected, then the Enter Cascade Switch Information window appears.
   a. The Assign Cascade Switch dialog box displays a list of all the interface adapters attached to a cascade switch. Associate the appropriate console switch from the dropdown list for each interface adapter that has a console switch attached.
   b. The Existing Cascade Switches dialog box contains a list of all the current console switches defined in the database. Click **Add, Modify,** or **Delete** to alter the list.

      The HP IP Console Viewer searches only for the number of servers designated by the console switch type (user definable).

      After a cascade switch has been added to an Existing Cascade Switches list, you can modify or delete the cascade switch displayed by selecting the cascade switch and clicking **Modify** or **Delete.**

      -or-

If no cascade switches attached to any interface adapters were detected, then the Completing Wizard window appears. Click **Finish** to exit and return to the main window.

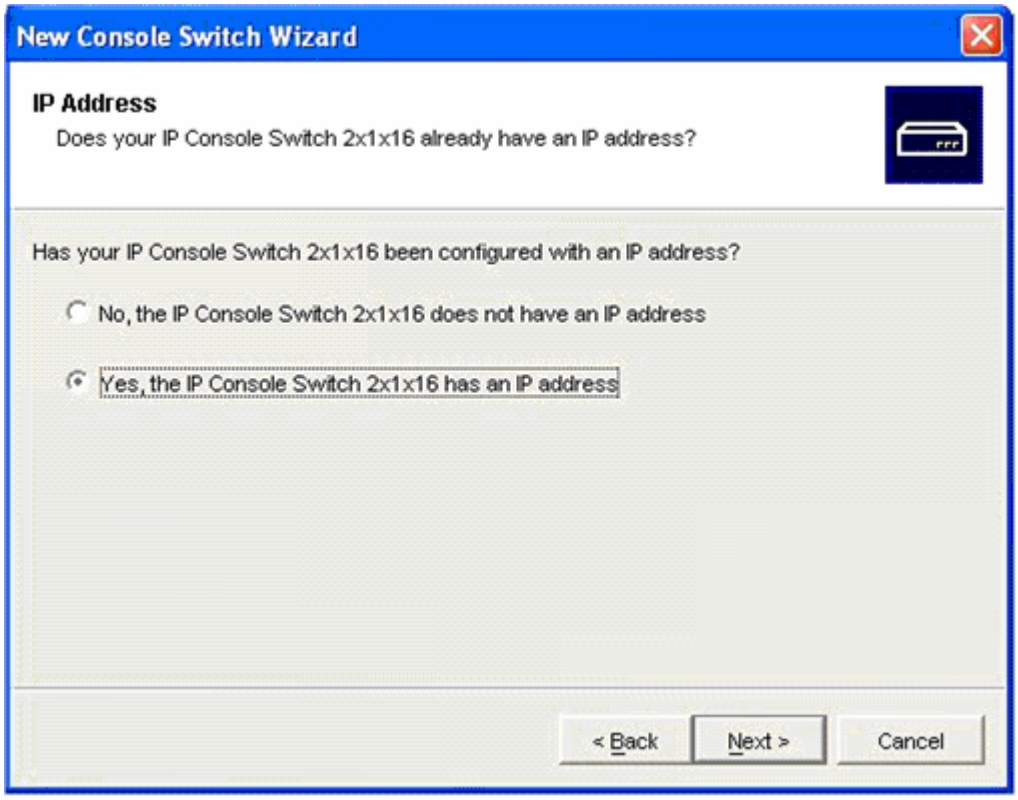


7. Click **Next.** The Completing the New Console Switch Wizard window appears.
8. Click **Finish** to exit and return to the main window. The console switch displays in the list view.

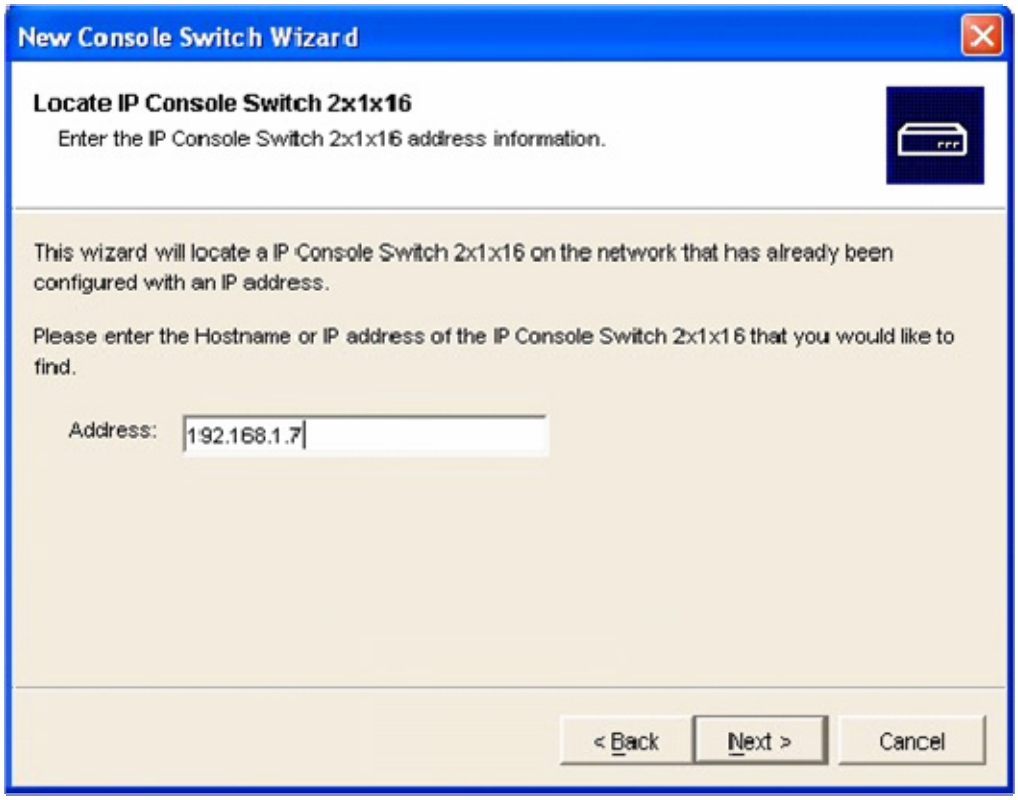
Adding a console switch with an assigned IP address

1. Select **File>New>Console Switch,** or click **New Console Switch.** The New Console Switch Wizard window appears.
2. Click **Next.** The Product Type window appears.

3. Select a product from the product list, and click **Next.** The IP Address window appears.


New Console Switch Wizard
IP Address
Does your IP Console Switch 2x1x16 already have an IP address?
Has your IP Console Switch 2x1x16 been configured with an IP address?
No, the IP Console Switch 2x1x16 does not have an IP address
Yes, the IP Console Switch 2x1x16 has an IP address
< Back
Next >
Cancel

4. Indicate that the HP IP Console Switch has an IP address assigned to it by selecting **Yes,** and click **Next.** The Locate IP Console Switch window appears.


New Console Switch Wizard
Locate IP Console Switch 2x1x16
Enter the IP Console Switch 2x1x16 address information.
This wizard will locate a IP Console Switch 2x1x16 on the network that has already been configured with an IP address.
Please enter the Hostname or IP address of the IP Console Switch 2x1x16 that you would like to find.
Address:
192.168.1.7
< Back
Next >
Cancel

5. Enter the HP IP Console Switch IP address or DNS name, and click **Next.** The IP Console Viewer searches for the console switch and all interface adapter IDs and server names associated with the particular console switch. The Found window appears.
6. Click **Next.** If a cascade legacy analog console switch attached to at least one interface adapter is detected, then the Enter Cascade Information window appears.
   a. The Assign Cascade Switch dialog box displays a list of all the interface adapters attached to a cascade switch. Associate the appropriate console switch from the dropdown list for each interface adapter that has a console switch attached.
   b. The Existing Cascade Switches dialog box contains a list of all the current console switches defined in the database. Click **Add, Modify,** or **Delete** to alter the list.

      The IP Console Viewer searches only for the number of servers designated by the console switch type (user definable).

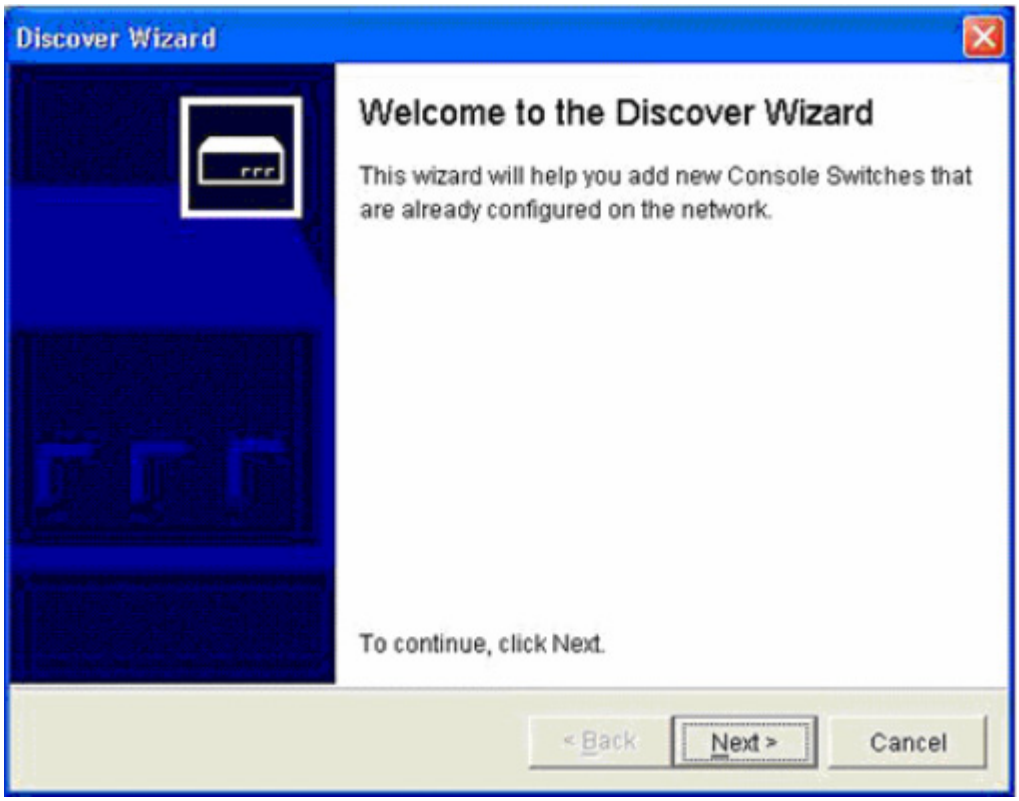
      After a cascade switch has been added to an Existing Cascade Switches list, you can modify or delete the cascade switch displayed by selecting the cascade switch and clicking **Modify** or **Delete.**

      -or-

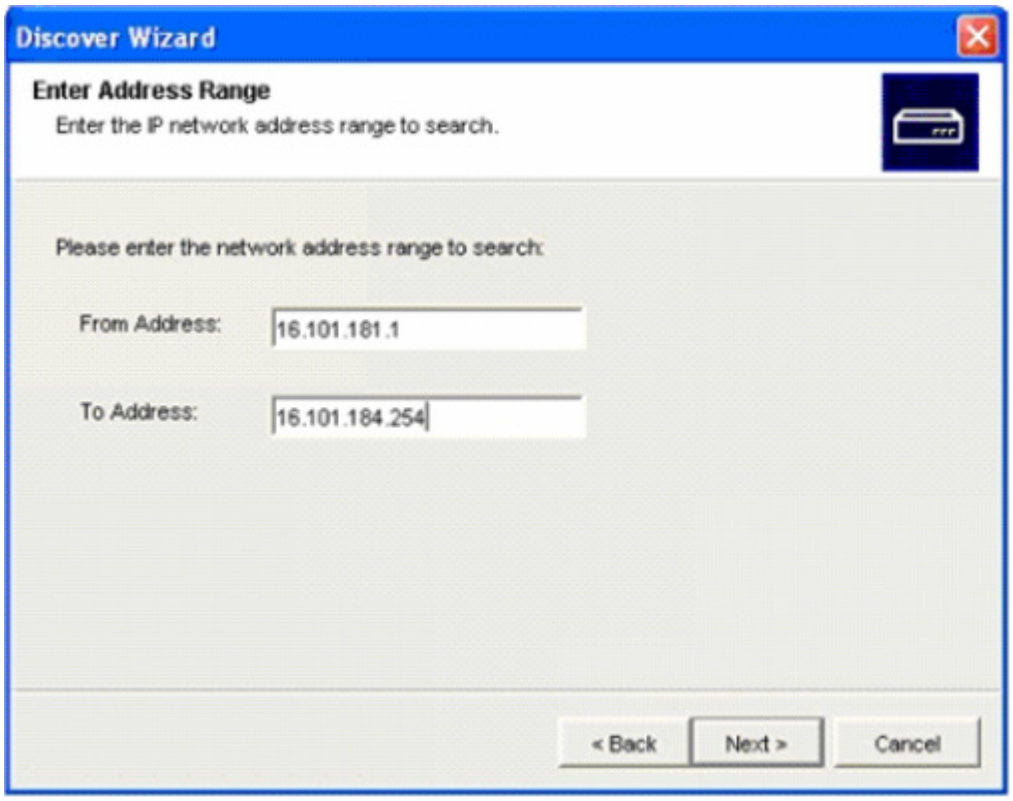
      If no cascade switches attached to any interface adapters were detected, then the Completing Wizard window appears. Click **Finish** to exit and return to the main window.
7. Click **Next.** The Completing the New Console Switch Wizard window appears.
8. Click **Finish** to exit and return to the main window. The console switch appears in the list view.

Discovering one or more console switches with the Discover Wizard

1. Select **Tools>Discover.** The Discover Wizard window appears.


Discover Wizard
Welcome to the Discover Wizard
This wizard will help you add new Console Switches that are already configured on the network.
To continue, click Next.
< Back
Next >
Cancel

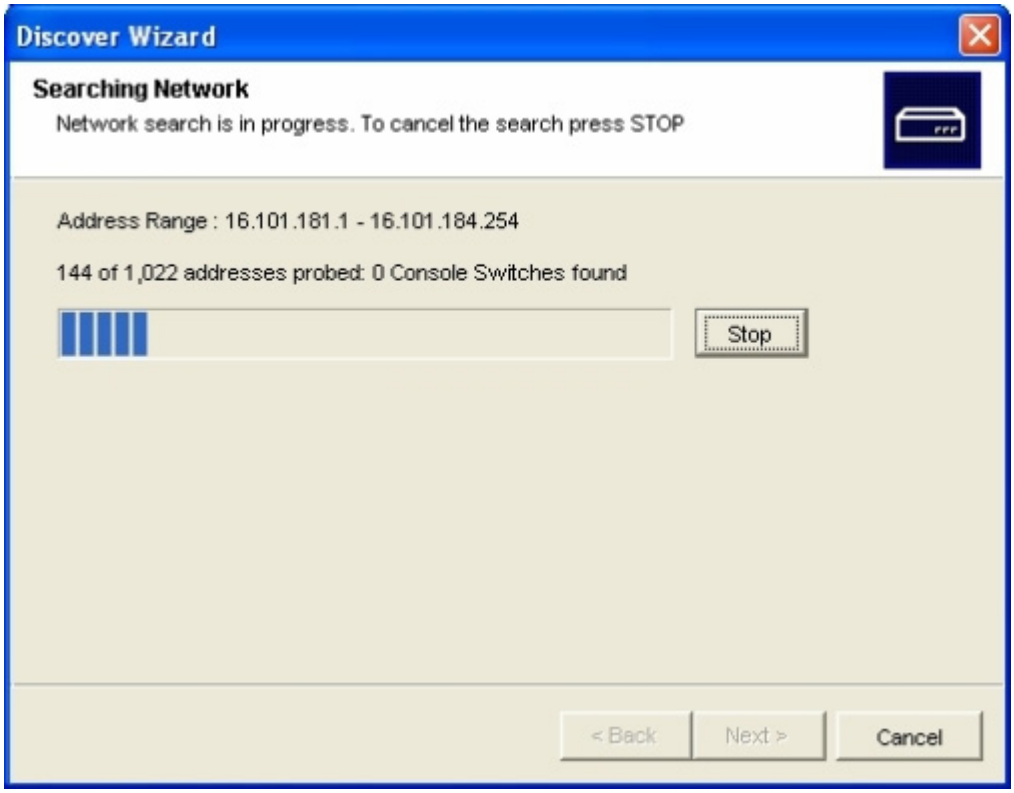
2. Click **Next.** The Enter Address Range window appears.



3. Enter a valid range of network IP addresses to search on the network in the From Address: and the To Address: fields. Use the IP address dot notation:

   `xxx.xxx.xxx.xxx.`

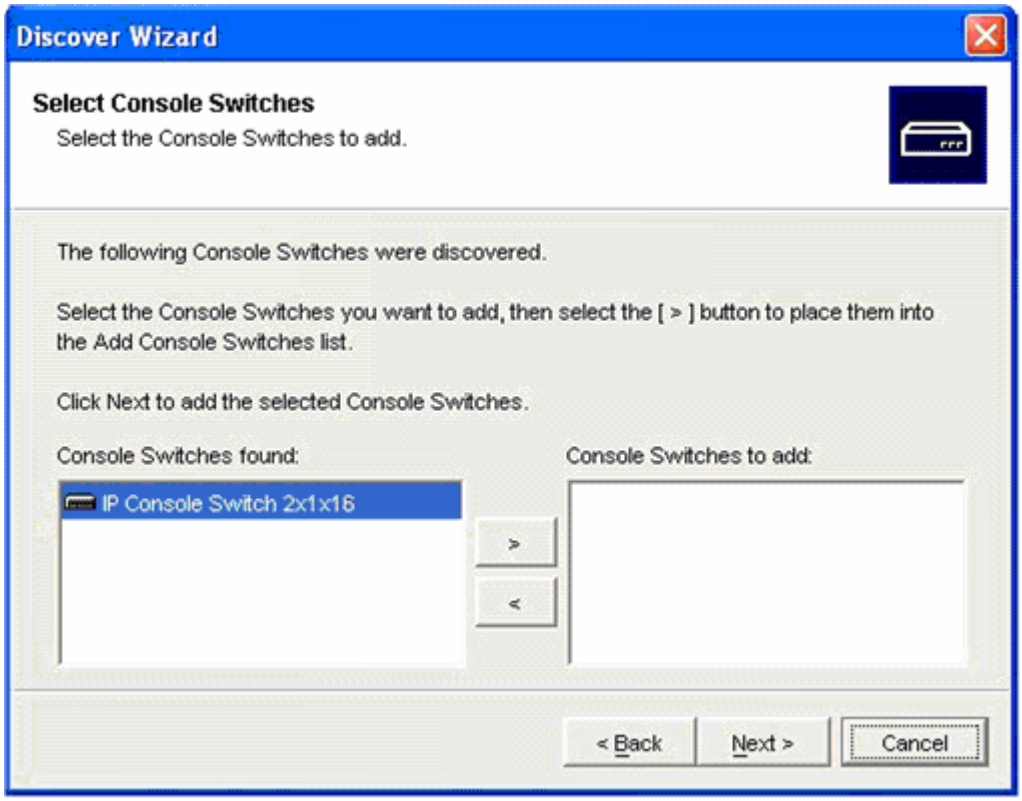
4. Click **Next.** The Searching Network window appears. Progress text indicates how many addresses have been probed from the total number specified by the range and the number of IP console switches found.


Discover Wizard
Searching Network
Network search is in progress. To cancel the search press STOP
Address Range : 16.101.181.1 - 16.101.184.254
144 of 1,022 addresses probed: 0 Console Switches found
Stop
< Back
Next >
Cancel

If one or more new console switches are discovered, the Select Console Switches window appears. From this window, you can select the console switches to add to the local database. Continue to step 6.

-or-

If no new console switches are found or if you pressed **Stop** during the add process, the Discover Wizard was unsuccessful window appears. Click **Finish** to exit. You must add the console switch manually. For more information, see the section, "Adding a console switch without an assigned IP address (on page 21)."


Discover Wizard
Select Console Switches
Select the Console Switches to add.
The following Console Switches were discovered.
Select the Console Switches you want to add, then select the [>] button to place them into the Add Console Switches list.
Click Next to add the selected Console Switches.
Console Switches found:
IP Console Switch 2x1x16
Console Switches to add:
>
<
< Back
Next >
Cancel

NOTE: If you are using Windows XP SP2 and are trying to discover a broad range of IP addresses and the device you are trying to discover does not display, limit the number of TCP threads to ten.

5. Select one or more console switches to add from the Console Switch Found: box, and click the **>** button to move the selection to the Console Switches to add: box. Repeat for all the console switches that you want to add.
6. Click **Next.** The Adding Console Switches window appears. A progress bar appears while new console switches are added to the list.

   When all of the selected consoles have been added to the local database, the Completing the Discover Wizard window appears. Click **Finish** to exit and return to the main window. The new console switches appear in the list view.

   If one or more console switches could not be added to the local database for any reason, including if you pressed **Stop** during the add process, the Discover Wizard Not All Console Switches Added page appears. This page lists all of the console switches that you selected and the status for each. The status is indicated if a console switch was added to the local database and if not, why the process failed. Click **Done** when you are finished reviewing the list.

NOTE: If a console switch already exists in the local database with the same IP address as a discovered console switch, then the discovered console switch is ignored and is not displayed on the next Discover Wizard window.

Managing multiple connections

A server that has connections to more than one console switch managed by the HP IP Console Viewer usually appears as two different servers in the main window when the console switches are initially discovered. For example, a server can have a serial console port connected to a serial console switch, in addition to being connected to a kvm console switch.

You can configure such a server to appear only once, and the main window provides the valid connection methods for accessing the server (for example, the Launch KVM Session and Launch Serial Session task buttons). To configure a server to appear only once, the serial console switch port name and the KVM console switch interface adapter must be set to the same name. You can rename the interface adapter, or serial port, through the Servers category in the Manage Console Switch window.

To rename an interface adapter through the HP IP Console Viewer:

1. Access the console switch ("Accessing console switches" on page 34).
2. Select **Servers.**
3. Highlight the server in the Servers column that you want to modify. You can modify only one server at a time.
4. Click **Modify.** The Modify dialog box appears with the current name of the server as stored in both the console switch and the client database (not necessarily the same).
5. Enter the new name of the server in the New Name: field.
6. Click **OK** to change the server name.
7. Repeat steps 1 through 5 for every server name that you want to change.
8. Click **Apply** to save any changes. This process dynamically updates the HP IP Console Viewer database, the console switch and the interface adapter simultaneously.

To rename the serial ports on the serial console switch through the HP IP Console Viewer:

1. Access the serial console switch ("Accessing console switches" on page 34).
2. Select **Servers.**
3. Select the server in the Servers column that you want to modify. You can modify only one server at a time.
4. Click **Modify.** The Modify dialog box appears with the current name of the server as stored in both the console switch and the client database (not necessarily the same).
5. Enter the new name of the server in the New Name: field.
6. Click **OK** to change the server name.
7. Repeat steps 1 through 5 for every server name that you want to change.
8. Click **Apply** to save any changes. This process dynamically updates the HP IP Console Viewer database, the console switch and the interface adapter simultaneously.

To rename the server locally:

1. Using the serial console switch CLI, issue a `Port Set` command with the `Name` parameter. For example, if you want the server connection to the serial console switch to have the same name as its KVM console switch connection, change the name using the serial console switch CLI. For more information on CLI commands, see the documentation included with the serial console server.
2. Using the KVM console switch OSD, configure the server name with the Names dialog box. For more information on the OSD, see the user guide included with your KVM console switch.
3. Resynchronize the server list in the appropriate Manage Console Switch window. For more information, see "Resynchronizing the server listing for console switches (on page 57)" or "Resynchronizing the server listing for serial console switches (on page 132)."

For example, if you changed the server name on the serial console switch, resynchronize the server list in the Manage Serial Console Switch window.

Server naming

The HP IP Console Viewer requires that each KVM console switch, serial console switch, and server have a unique name. The HP IP Console Viewer uses the following procedure to generate a unique name for a server whose current name conflicts with another name in the database.

During background operations (such as an automated operation that adds or modifies a name or connection), if a name conflict occurs, the conflicting name is automatically made unique. This is done by appending a tilde (~) followed by an optional set of digits. The digits are added in cases where adding the tilde alone does not make the name unique. The digits start with a value of one and are incremented until a unique name is created.

During normal operations, if you specify a non-unique name, a message appears informing you that the server name is already in the database and you are prompted to merge server records. This option is useful when a target server can be managed by both the KVM session and a serial interface. For more information, see "Modifying server names (on page 56)" or "Modifying server names for serial console switches (on page 131)."

Server name displays

When a KVM console switch is added, the server names retrieved from the KVM console switch or serial console switch are stored in the HP IP Console Viewer database. The operator can then rename a server in the main window, and the new name is stored in the database and used in various HP IP Console Viewer component screens. This new server name is not communicated to the KVM console switch or serial console switch.

Because HP IP Console Viewer is a decentralized management system, the name assigned to a server on the console switch or serial console switch can be changed at any time without updating the HP IP Console Viewer database. This feature enables each operator to customize a particular HP IP Console Viewer view of the list of servers being managed.

Because there can be more than one name associated with a single server, one on the KVM console switch or serial console switch, and one in the HP IP Console Viewer, the HP IP Console Viewer uses the following rules to determine which name appears:

- The main window shows only the servers listed in its database, with the name specified in the database. In other words, the main window does not talk to the console switch or serial console switch to obtain server information.
- The Manage Console Switch window displays information retrieved from the console switch, except where noted.
- The Resync Wizard (which is used to resynchronize the server list in the Manage Console Switch window) overwrites locally defined server names only if the console switch server name has been changed from the server value in the Manage Console Switch window (its default value). For example, in KVM console switches, the default server name values are the EID of the interface adapter to which they are attached. In serial console switches, the default server name values are comprised of the console switch's MAC Address and the port number of the port to which the server is attached. Non-default server names that are read from the console switch during a resynchronization are allowed to override the locally defined names.

Sorting displays

In certain displays, an HP IP Console Viewer component displays a list of items with columns of information about each item. If a column header contains an arrow, you can sort the display by that column in ascending or descending order.

To sort a display by a column header, click the column header. The items in the list will be sorted according to that column. An upward-pointing arrow indicates the list is sorted by that column header in ascending order. A downward-pointing arrow indicates the list is sorted by that column header in descending order.

Managing cached credentials

To access KVM console switches, serial console switches, and servers, you must first enter a user name and password (credentials). The HP IP Console Viewer uses credential caching, which captures credentials upon first use and automates the authentication of subsequent unit connections.

After successfully authenticating, cached credentials are used whenever you access other units during that HP IP Console Viewer session, and the user name and password prompt does not appear unless authentication with the cached credentials fails.

Clearing login credentials

You can clear cached credentials at any time.

NOTE: Clearing login credentials also clears your preference for SSH versus plaintext serial sessions, if previously saved.

To clear login credentials:

1. Select **Tools>Clear Login Credentials.** A message appears.
2. Click **OK** to exit.

Accessing console switches

In this section

Accessing console switches overview..... 34

Accessing console switches overview

When you click the Console Switches icon, you see a list of the console switches currently defined in the local database.

To access a console switch, first log in with a valid password and user name. After you log into the console switch, the HP IP Console Viewer caches the user name and password into memory for the duration of the HP IP Console Viewer session. All HP IP Console Switch Viewer communications to the console switch use an SMP connection.

NOTE: You can clear the login credentials. For information on clearing the login credentials, see "Clearing login credentials (on page 33)."

To access a console switch:

1. Click **Console Switches** to display the console switches in the selected view.
2. Double-click the desired console switch. A login dialog box appears.

   -or-

   Select the console switch, and click **Manage Console Switch.** A login dialog box appears.

   -or-

   Right-click the console switch, and select **Manage Console Switch** from the resulting list. A login dialog box appears.

   -or-

   Click **Console Switches,** and press **Enter.** A login dialog box appears.
3. Enter a valid user name and password. If a new user name and password have not been created, the Override Admin. account can be used. The default user name for this account is `Admin` (case-sensitive), and the default password field is blank.

IMPORTANT: If you have previously logged in to the console switch during the same HP IP Console Viewer session, the login dialog does not display unless authentication or authorization fails or you clear the login credentials.

4. Click **OK.** The Manage Console Switch window appears. For information on managing console switches, see "Managing KVM console switches (on page 35) or "Managing serial console switches (on page 94)."

   -or-

   Click **Cancel** to exit without logging in.

Managing KVM console switches

In this section

Manage Console Switch window overview for KVM console switches 35
Viewing and configuring parameters through the Settings tab 35
Viewing the Status tab 66
Using the Tools tab 67

Manage Console Switch window overview for KVM console switches

After you have installed a new KVM console switch, you can view and configure unit parameters, view and control currently active video sessions, and execute a variety of control functions, such as rebooting and upgrading your KVM console switch.

The Manage Console Switch window consists of three tabs:

- Settings tab for KVM console switches ("Viewing and configuring parameters through the Settings tab" on page 35)
- Status tab for KVM console switches ("Viewing the Status tab" on page 66)
- Tools tab for KVM console switches ("Using the Tools tab" on page 67)

Some operations that you initiate through the Manage Console Switch window can cause a dialog box to appear, indicating that a reboot is required for the change to take effect. In such cases, you can choose to reboot immediately or wait to reboot later.

NOTE: References to the local user refer to an OSD user connected to the console switch.

For more information about the KVM console switch and its operations, see the documentation included with the KVM console switch.

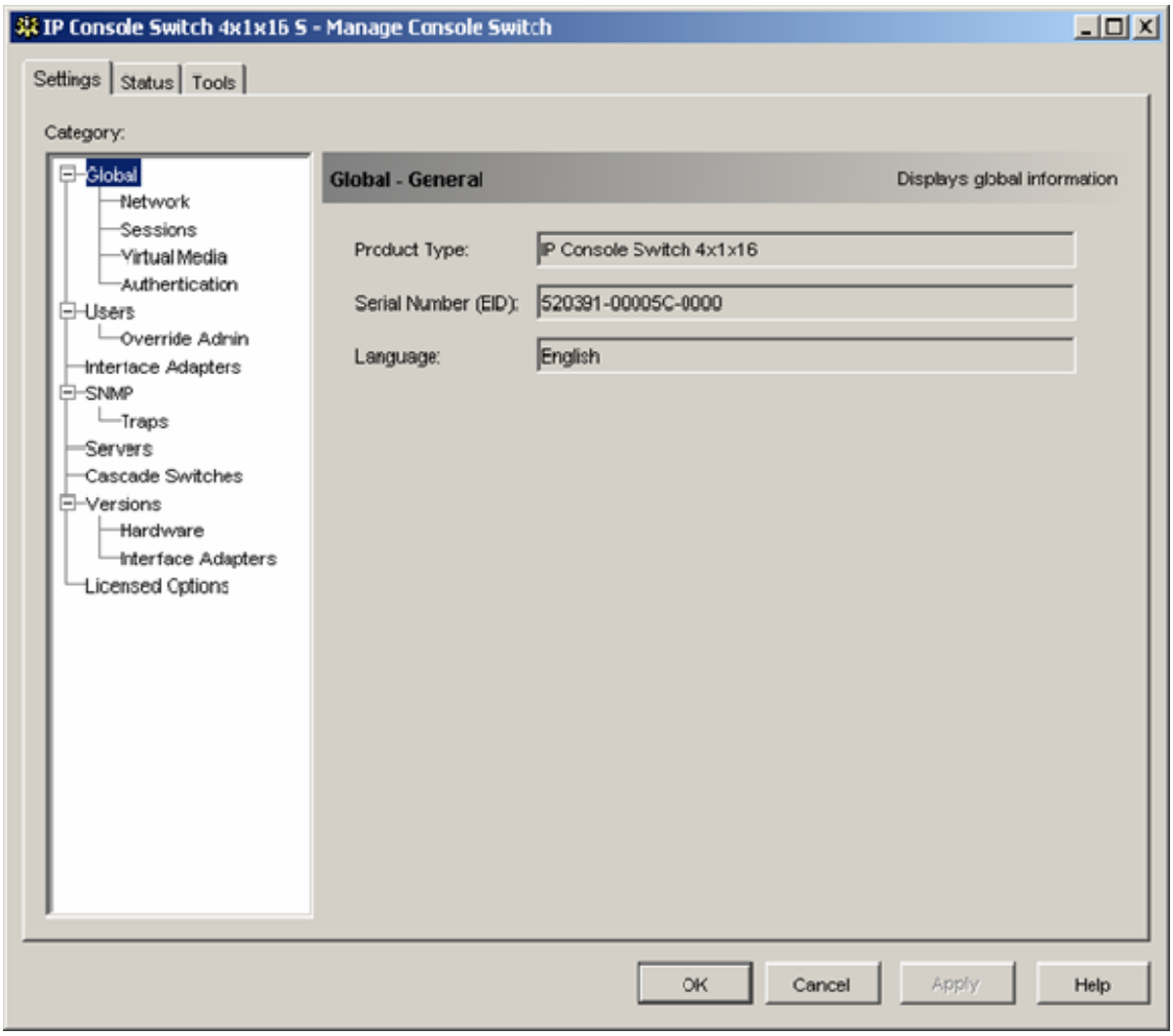
Viewing and configuring parameters through the Settings tab

The Settings tab enables you to display an expandable list of categories covering a wide range of parameters for the console switch. When a category is selected, the parameters associated with that category are read from the console switch, the database, or both. You can modify those parameters and send changes securely back to the console switch through the SMP.

Configuring global parameters

The Global category enables you to view the Product Type, Serial Number (EID), and the Language settings for the console switch.

The Serial Number (EID) field contains information for the HP IP Console Switch hardware and the EID attached to that console switch.

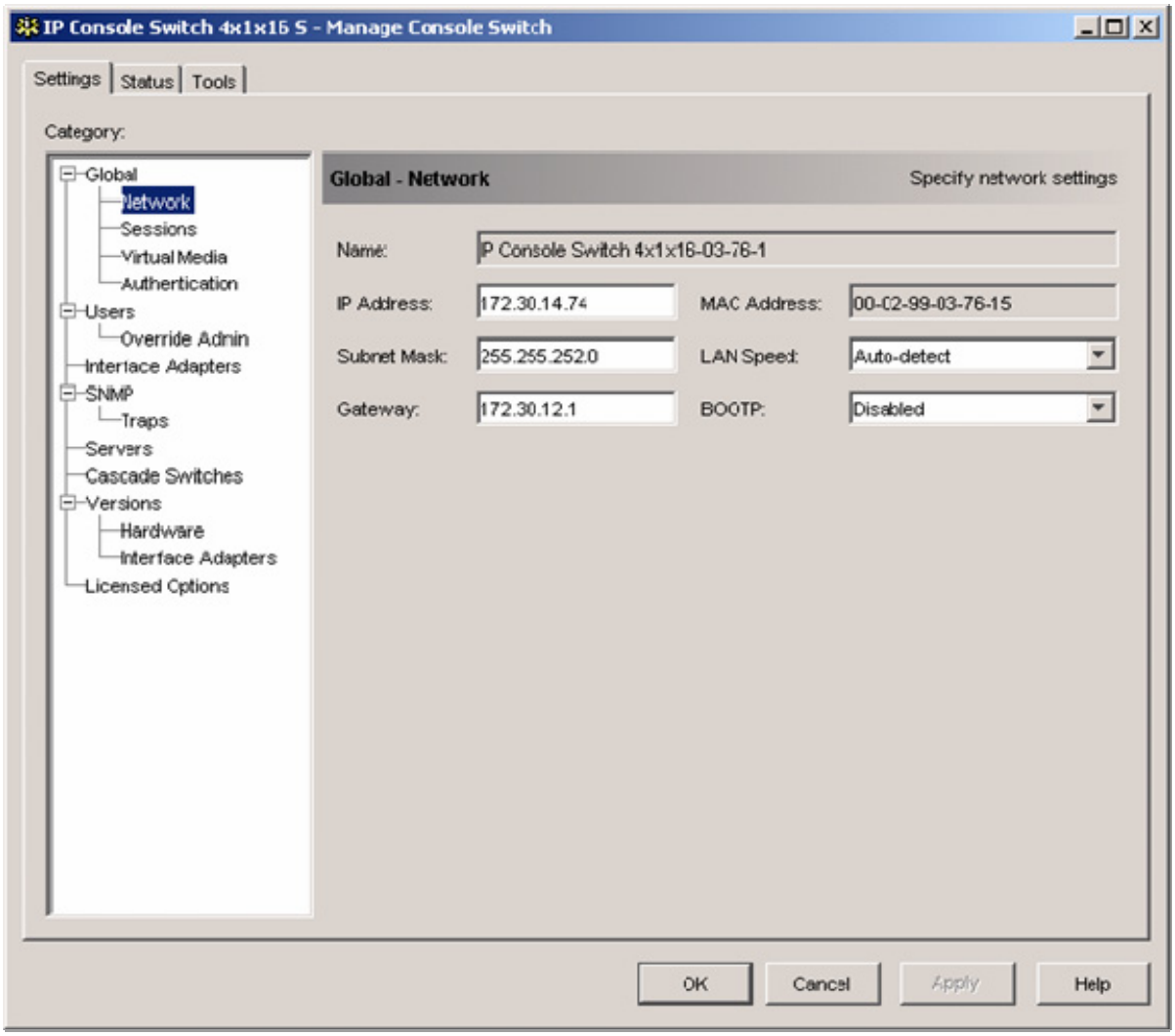


Configuring network parameters

The Network subcategory enables you to view the network settings of a console switch, including the Name (read-only), IP Address, Subnet Mask, Gateway, MAC Address (read-only), LAN Speed, DNS Servers, and Bootp settings. You can change the console switch name in the SNMP category.

The DNS servers can be used to find domain controllers during LDAP authentication and authorization operations, but HP recommends using IP addresses.

The DNS Server fields appear only if LDAP Authentication is licensed on the console switch.



To change network parameters:

1. Select **Network.**
2. Select **Enabled** if a BOOTP server is to be used to obtain the network configuration. The remaining fields on this panel are disabled.

   -or-

   Select **Disabled** if a static network configuration is used to obtain the network configuration.

   a. In the IP Address field, enter the address in IP dot notation of the console switch. The value cannot be a loopback address or all zeros.

   b. In the Subnet Mask field, enter the subnet mask in IP address dot notation of the console switch. The value cannot be a loopback address or all zeros.

   c. In the Gateway field, enter the gateway address in IP address dot notation of the console switch. The value cannot be a loopback address. If there is no gateway address, enter 0.0.0.0.

   d. In the DNS Servers fields, enter the address in IP dot notation of up to three DNS servers.
3. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

Configuring session parameters

The Sessions subcategory enables you to specify the active Video Session Timeout, which configures the console switch to close an inactive video session after a specified number of minutes.

NOTE: If a video session is associated with a reserved Virtual Media session, then the video session is not subject to the video session timeout.

This subcategory also enables you to configure the preemption warning settings. Enabling the Video session preemption timeout option enables you to specify the time (5 to 120 seconds) for which a preemption warning message appears before a video session is preempted. If this option is not enabled, preemption occurs without warning.

You can also set the SSL encryption levels to use for the encryption of keyboard and mouse data of all video sessions to the console switch. You can also enable video encryption.

Video encryption is optional, but at least one Keyboard/Mouse encryption level must be selected.

The Sessions subcategory can also be used to enable Connection Sharing options. In the Connection Sharing area, select sharing options as needed.

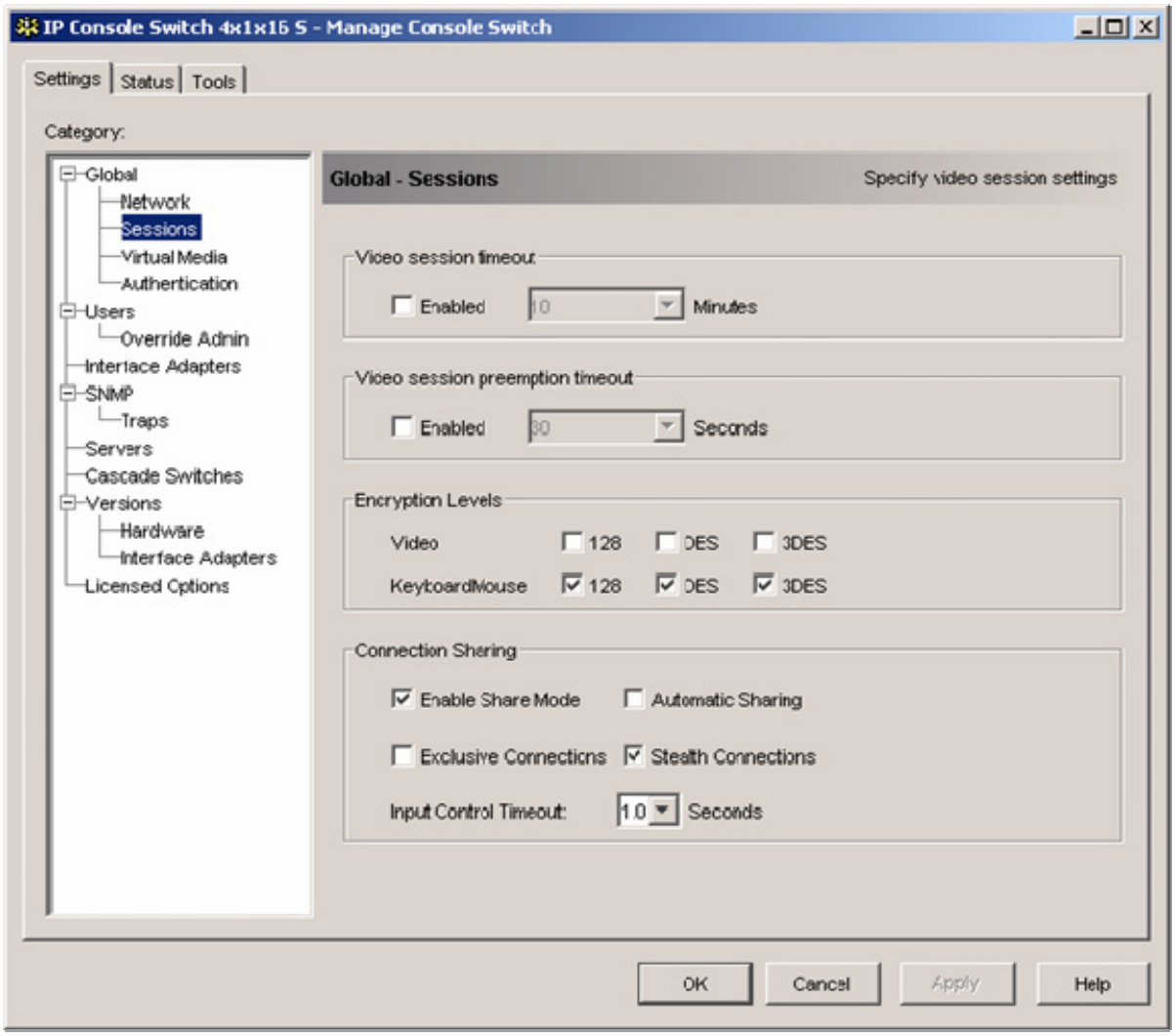
- If you select **Enable Share Mode,** users can share KVM sessions for the same server.
- If you select **Automatic Sharing,** secondary users can share KVM sessions without first requesting permission from the primary user.
- If you select **Exclusive Connections,** primary users can designate a KVM session as exclusive (exclusive sessions cannot be shared).
- If you select **Stealth Connections,** administrators can monitor a server and remain undetected.

You can also specify in the Input Control Timeout field the number of seconds the console switch will wait for activity before transferring keyboard and mouse control from the primary user to the secondary user.

NOTE: The highest encryption level will be used, based on the following order (highest to lowest):

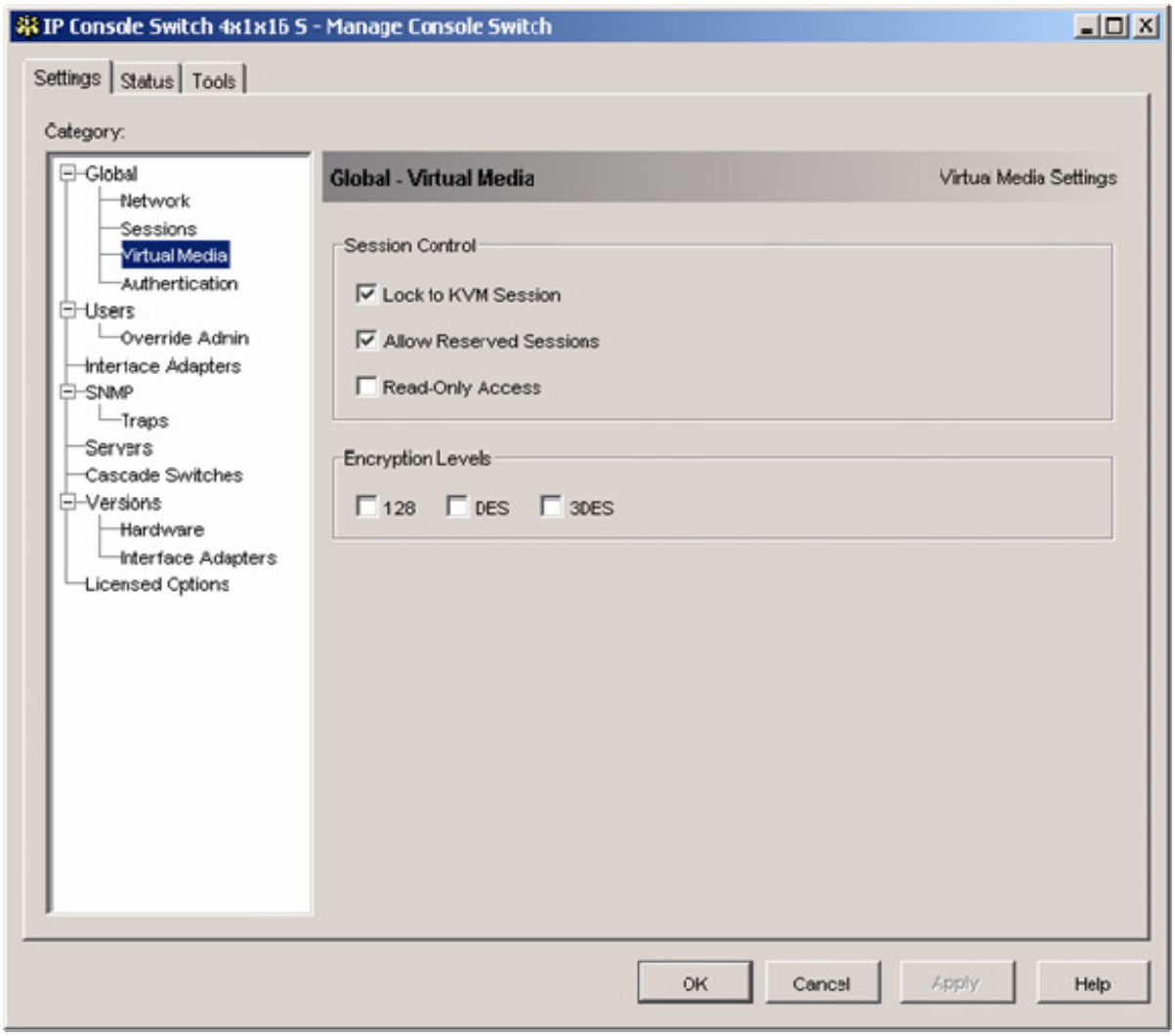
- 128-bit encryption
- 3DES
- DES

For more information on connection sharing, see "Video session types (on page 75)."



Configuring Virtual Media parameters

The Virtual Media subcategory enables you to specify the settings for Virtual Media sessions.



Parameter	Function
Lock to KVM Session	When selected, a Virtual Media session is not allowed to remain after the Video Session Viewer that launched it closes. If not selected, the virtual media session is allowed to remain when the associated video session is closed. This setting is enabled by default.
Allow Reserved Sessions	Enables Virtual Media sessions to be reserved. The user only allowed to establish a KVM session to a reserved virtual media session is the owner of the Virtual Media session. This setting affects the showing of the reserved setting in the Virtual Media. If this feature is enabled, KVM sharing is not allowed while there is a reserved Virtual Media session. If you select Allow Reserved Sessions, then the owner of the Virtual Media session can choose to prevent other users from establishing a KVM session to the same server. Also when the Virtual Media session is reserved, the corresponding KVM session is not subject to inactivity timeouts and cannot be preempted. This setting is disabled by default.
Read-Only Access	Prevents write access to the Virtual Media devices that allow it. CD-ROMs and other media that do not allow write access are not affected by this setting. This setting is enabled by default.

Parameter	Function
Encryption level	This control can be used to specify the encryption method to use for all Virtual Media sessions. This information is used when new client connections are requested. At that point, the console switch will attempt to negotiate for the highest enabled encryption mechanism level. This setting is disabled by default.

To configure these settings:

1. Select **Virtual Media.**
2. Enable or disable the checkboxes in the Session Control area.
   - If you clear the **Lock to KVM Session** option, your Virtual Media sessions can remain after the Video Session Viewer that launches the session closes.
   - If you select **Allow Reserved Sessions,** only the owner of the Virtual Media session can establish a KVM session to a reserved Virtual Media session.
   - If you select **Read-Only Access,** write access to Virtual Media sessions is prevented.
3. Select zero or more levels of encryption to encode Virtual Media data sent to the console switch in the Encryption Level area. The highest level enabled will be used.
4. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

   -or-

   Click **Cancel** to exit without saving any changes.

Configuring authentication parameters

The Authentication subcategory enables you to select the type of authentication method to be used.

IMPORTANT: Before implementing LDAP functionality, see "HP IP Console Switch directory services integration setup tutorial (on page 208)" for a better understanding of how LDAP works.

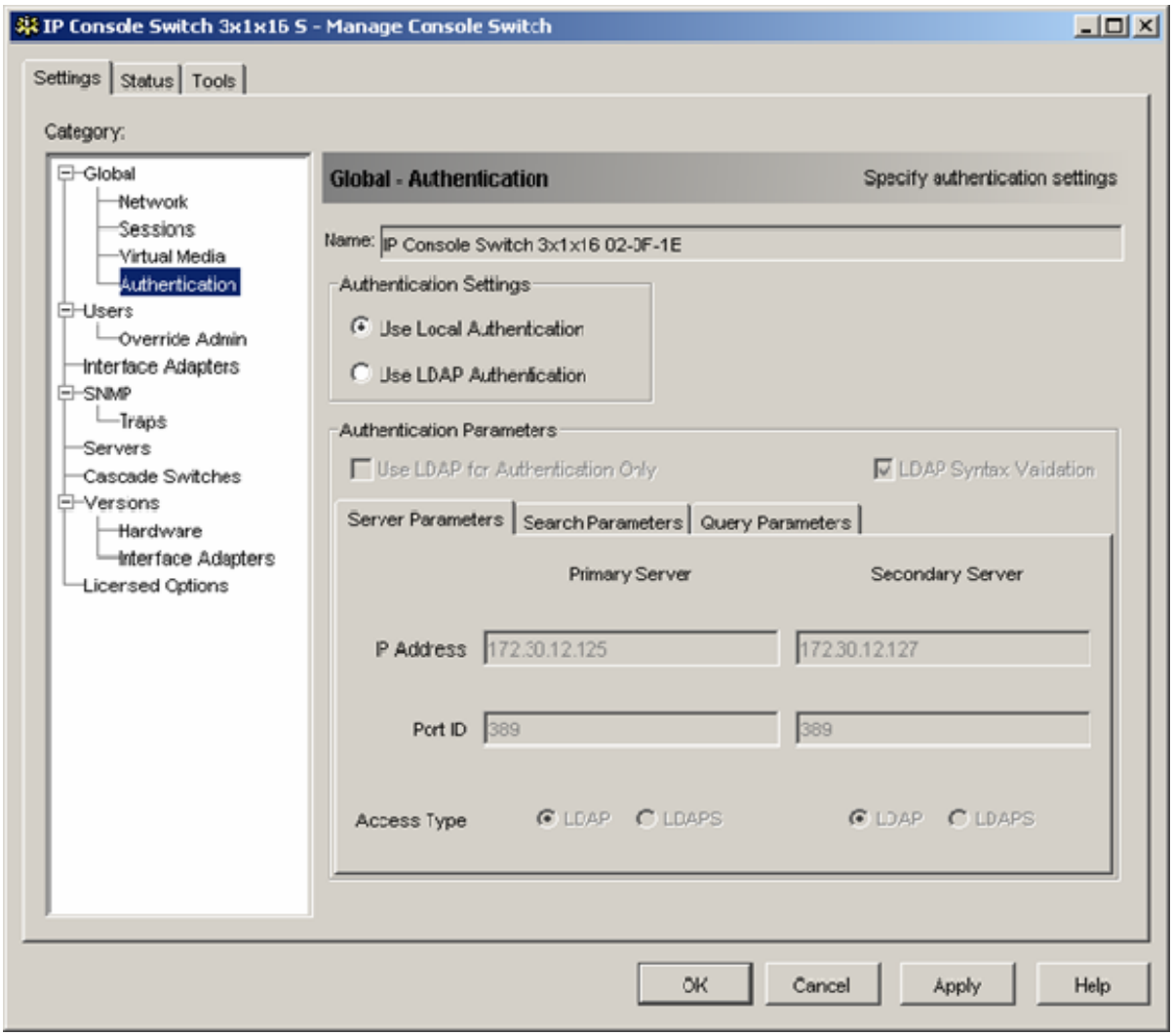
The three types of authentication are:

- Local Authentication (with local access control)

  Provides secure managed switch based authentication, data transfers, and user name and password storage. With two levels of access control, Console Switch Administrator and User, you can set target server-specific access rights and inter-operate with existing firewalls, VPNs, and NAT-based networks. This is the default setting and has the same functionality as in the previous software release.
- LDAP Authentication Only (with local ACL)

  Provides a secure managed directory-based authentication for passwords and user names and a local switch-based authorization for ACLs. ACLs are maintained and stored in each individual console switch. Passwords are only in the directory server. For more information on LDAP, see "Using directory services integration (on page 182)."
- LDAP Authentication and Access Control

Provides a secure managed directory-based authentication for user names and passwords, as well as access control. User rights and user accounts are stored in the directory. For more information on LDAP Access Control, see "Using directory services integration (on page 182)."



Configuring user accounts

The Users category enables you to configure user accounts. There are two types of user accounts: internal and external. Internal accounts, such as Local Authentication accounts, reside within the console switch, while external accounts, such as LDAP Authentication and Access Control accounts, are stored in the directory.

When you select the Users category for the first time, the Manage Console Switch function retrieves and displays user information and current access levels based on the type of authentication you have selected.

- When Local Authentication or LDAP Authentication Only modes are enabled, the Manage Console Switch retrieves and displays a list of user names and current access levels from the console switch.

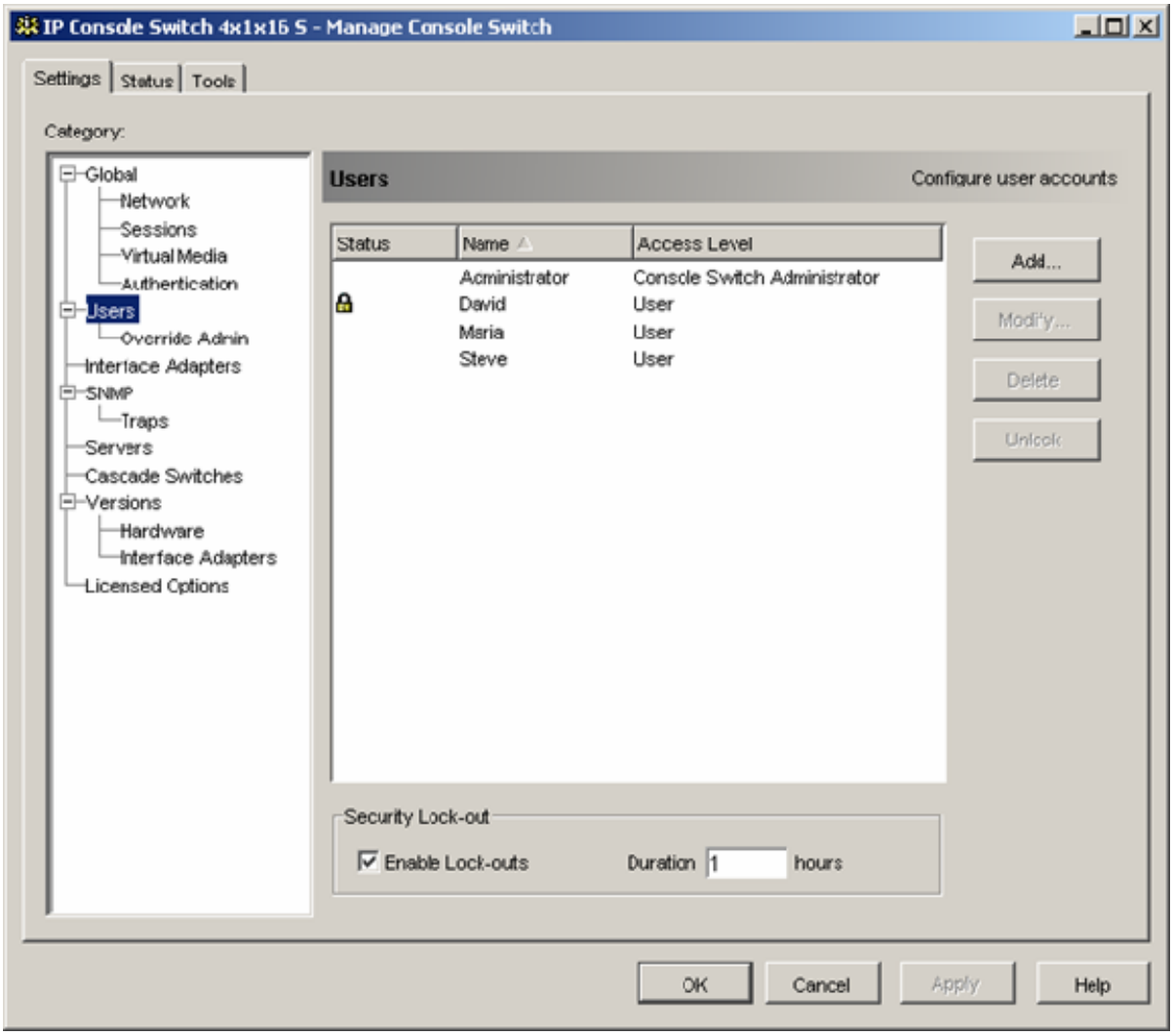
  Through the Users category, when Local Authentication or LDAP Authentication Only modes are enabled, you can:

  - Add, modify, or delete users in this listing (user names must match the user in the Directory if LDAP is used for authentication)
  - Assign access levels: Console Switch Administrator or User
  - Assign individual server access rights to a user through the User Access Level function

- Enable the Security Lock-out feature that can lock out users if they try to enter an invalid password five consecutive times (This feature enables you to configure the Security Lock-out settings, as well as unlock any users.)

NOTE: The Security Lock-out feature applies only to Local authentication. When LDAP authentication is used, the lockout functionality of the directory service is used.

- When LDAP Authentication and Access Control mode is enabled, the user names and access rights are stored in and managed from the Active Directory.



A user can be assigned one of two access levels: Console Switch Administrator or User. The user access level enables you to assign individual server access rights to a user. The table following indicates the types of console switch operations that may be performed in each access level.

Operation	Console Switch Administrator	User
Preemption	All	No
Configure Global and Network settings (security mode, timeout, and SNMP)	Yes	No
Reboot	Yes	No
Upgrade	Yes	No
Administer user accounts	Yes	No

Operation	Console Switch Administrator	User
Configure port settings	Yes	No
Monitor server status	Yes	No
Server device access	Yes	Assigned by admin
Server resync	Yes	Yes

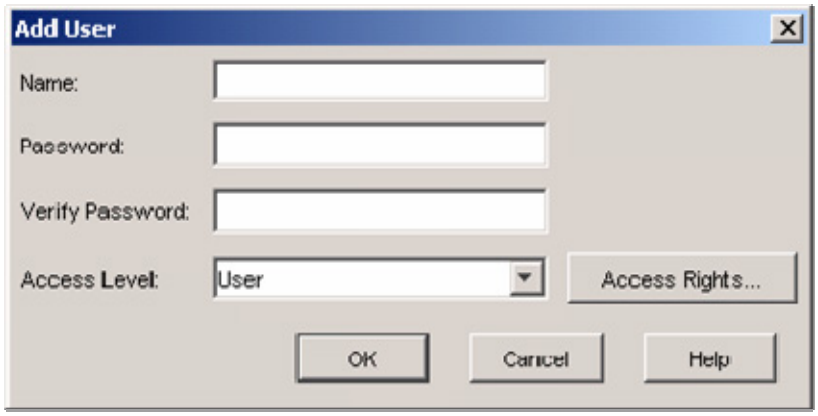
Adding or modifying a user

Adding or modifying a Local Authentication user

1. Select **Users.**
2. Select a user.
3. Click **Add** to add a new user. The Add User dialog box appears.

   -or-

   Click **Modify** to modify a current user. The Modify User dialog box appears.



IMPORTANT: Passwords must be between five and 16 characters in length, contain both alphabetic and numeric characters, and contain both uppercase and lowercase alphabetic characters.

IMPORTANT: User names must be between one and 16 characters. If you intend on using the optional LDAP functionality in the future, be sure to follow the Microsoft® Active Directory user account rules when creating a user name.

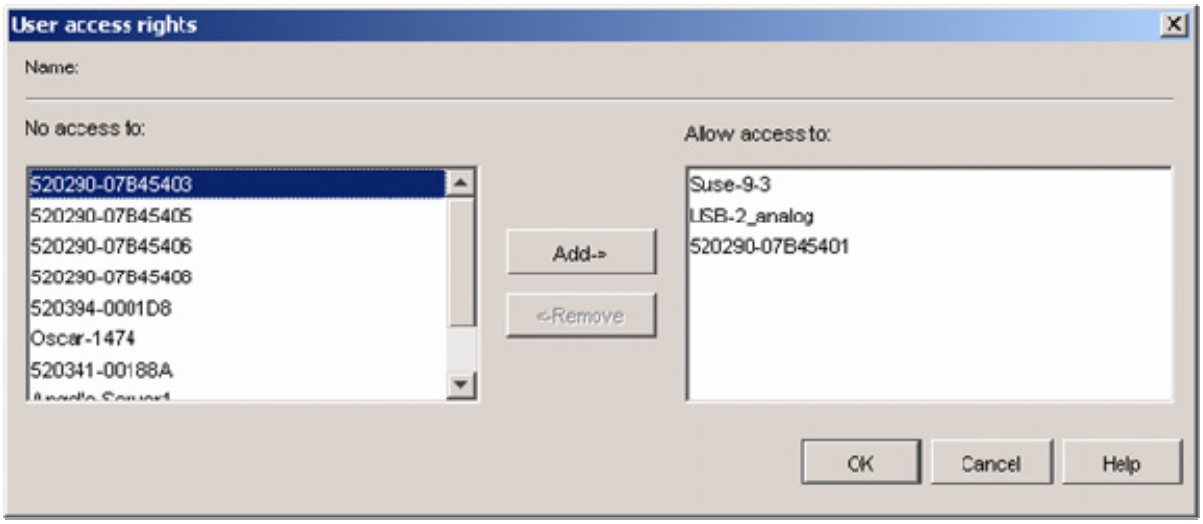
4. Enter the user name and password (user assigned), and verify the password by entering it again in the Verify Password field.

NOTE: The Access Rights button is enabled only when Access Level=User is selected.

NOTE: The password fields are disabled (grayed-out), when using LDAP Authentication Only mode.

5. Select the appropriate access level for the user from the Access Level dropdown list. If you select the User option, the Access Rights button activates.
   a. Click **Access Rights** to select individual servers for that user. The User access rights dialog box appears.
   b. From the left column, select one or more servers for which this user should have access rights. Click **Add.**
   c. From the right column, select one or more servers from which to remove the access rights of a user. Click **Remove.**

d. Repeat steps b and c until the right column represents the appropriate server access for this user, and click **OK.**



6. Click **OK** to save settings and return to the main window, or click **Cancel** to exit.

Adding or modifying an LDAP Authentication Only user

NOTE: For LDAP Authentication and Access Control users, add user accounts and passwords in the directory.

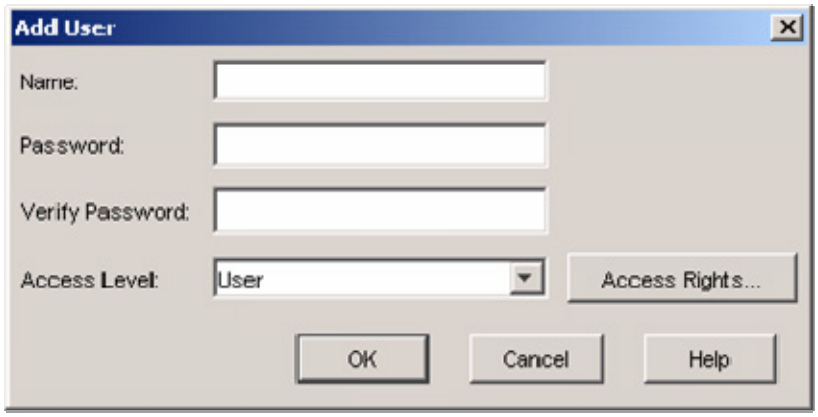
1. Select **Users.**
2. Select a user.

IMPORTANT: The user name in the Users category must be the same as the display name in the active directory.

3. Click **Add** to add a new user. The Add User dialog box appears.

   -or-

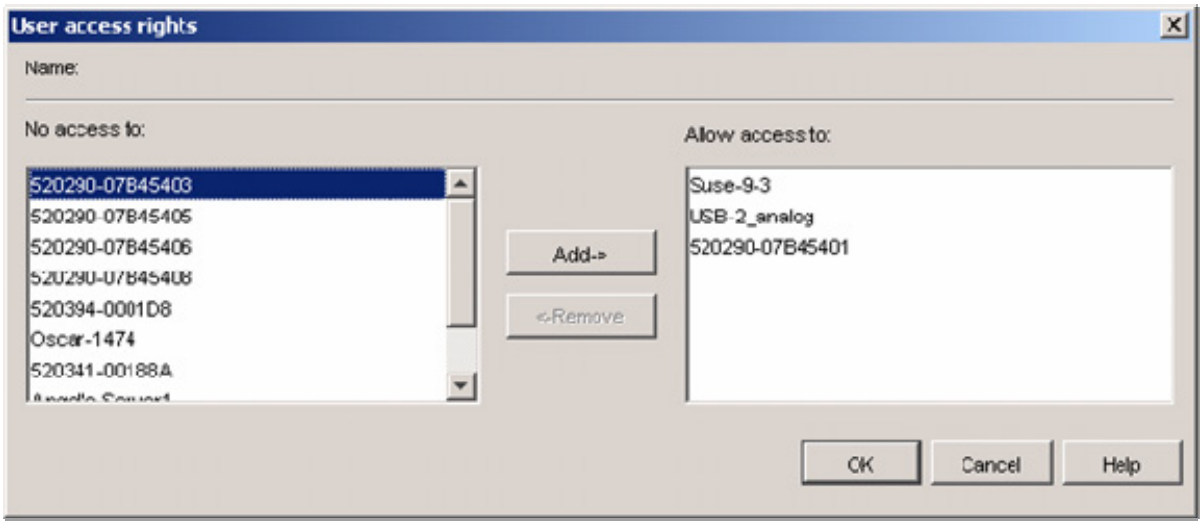
   Click **Modify** to modify a current user. The Modify User dialog box appears.



4. Select the appropriate access level for the user from the Access Level dropdown list. If you select the User option, the Access Rights button activates.
   a. Click **Access Rights** to select individual servers for that user. The User access rights dialog box appears.
   b. From the left column, select one or more servers for which this user should have access rights. Click **Add.**

c. From the right column, select one or more servers from which to remove a user's access rights. Click **Remove.**

d. Repeat steps b and c until the right column represents the appropriate server access for this user, and click **OK.**



5. Click **OK** to save the settings and return to the main window, or click **Cancel** to exit.

Setting user access rights

1. Click **Access Rights** to select individual servers for that user. The User access rights dropdown list appears.
2. Select a server in the left column, and click **Add.**
3. Select a server in the right column, and click **Remove.**
4. Repeat steps 2 and 3 until the right column represents the appropriate server access for the assigned user, and click **OK.**

Deleting a user

1. Select **Users.**
2. Select a user.
3. Click **Delete.** The Confirm Deletion dialog box appears.
4. Click **Yes** to confirm the deletion, or click **No** to exit the window without deleting the user.

Locking and unlocking user accounts

If the console switch is configured for Local Authentication and a user enters an invalid password five consecutive times, the Security Lock-out feature temporarily disables that account. If a user attempts to log in again, an error message appears from the software client application. All local accounts, except the Override Admin account are subject to this lock-out policy.

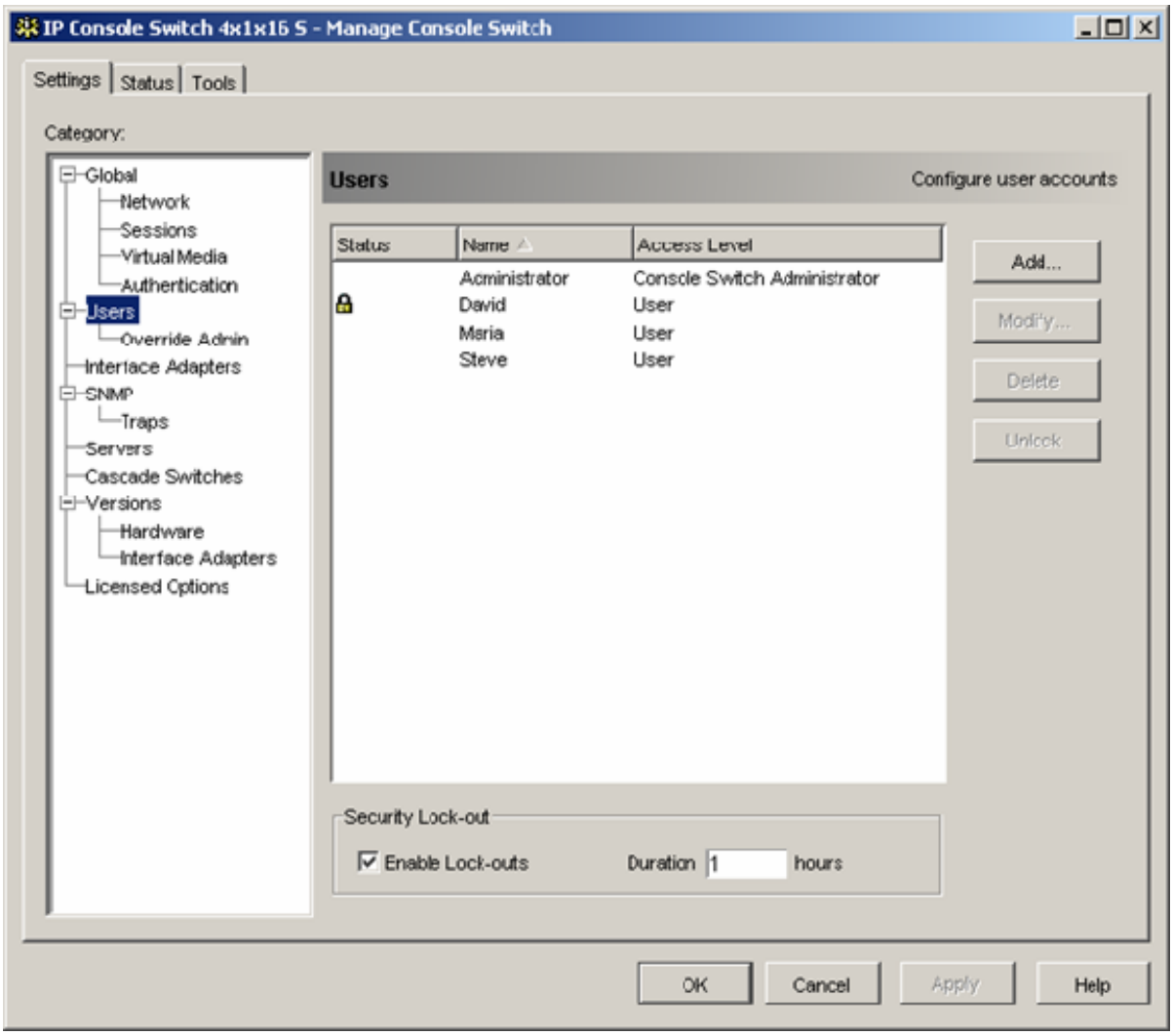
An administrator can specify the number of hours (1 to 99) that accounts are locked. When Enable Lock-outs is not selected, the Security Lock-out feature is disabled, and no users can be locked out.

If an account becomes locked, it remains locked until the number of hours specified in the Duration field has elapsed, the console switch is power cycled, or an administrator unlocks the local account using the Unlock function on this panel.

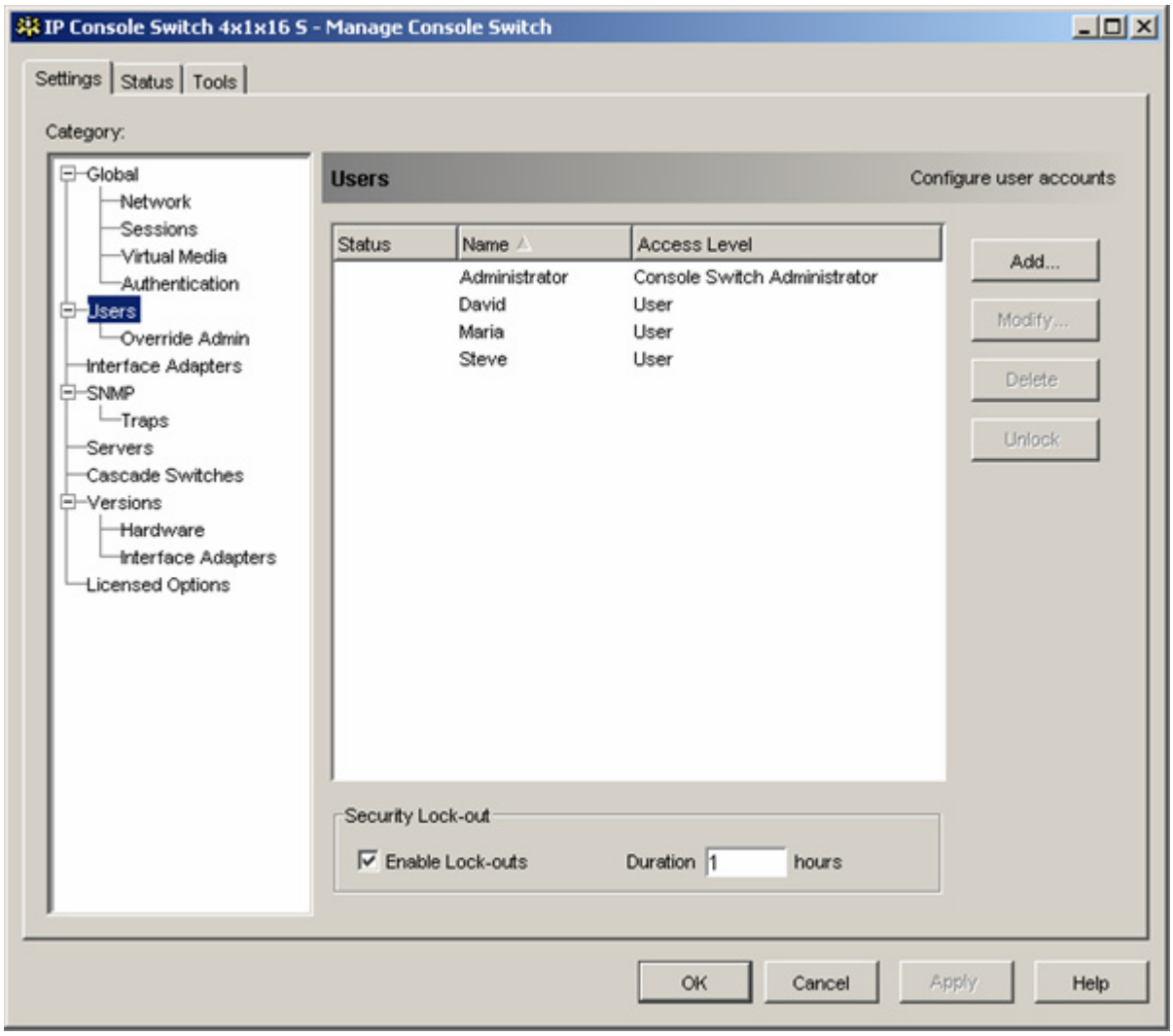
NOTE: If your account is locked and you have LDAP Authentication and Access Control enabled, your account must be unlocked through the Active Directory. Contact your active directory administrator for further details.

Unlocking an account

1. Select **Users.**



2. Click **Unlock.** The Lock icon next to the user name disappears.



3. Click **OK** or **Apply.** The user can log in.

   -or-

   Click **Cancel** to exit without saving.

Enabling or disabling a security lock-out

1. Select **Users.**
2. Select **Enable Lock-outs.** Enter the number of hours (1 to 99) in the lock-out period in the Duration field.

   -or-

   Clear **Enable Lock-outs.**
3. Click **Apply,** and then click **OK.**

NOTE: Disabling Security Lock-out has no effect on users who are already locked out.

Specifying a security lock-out duration

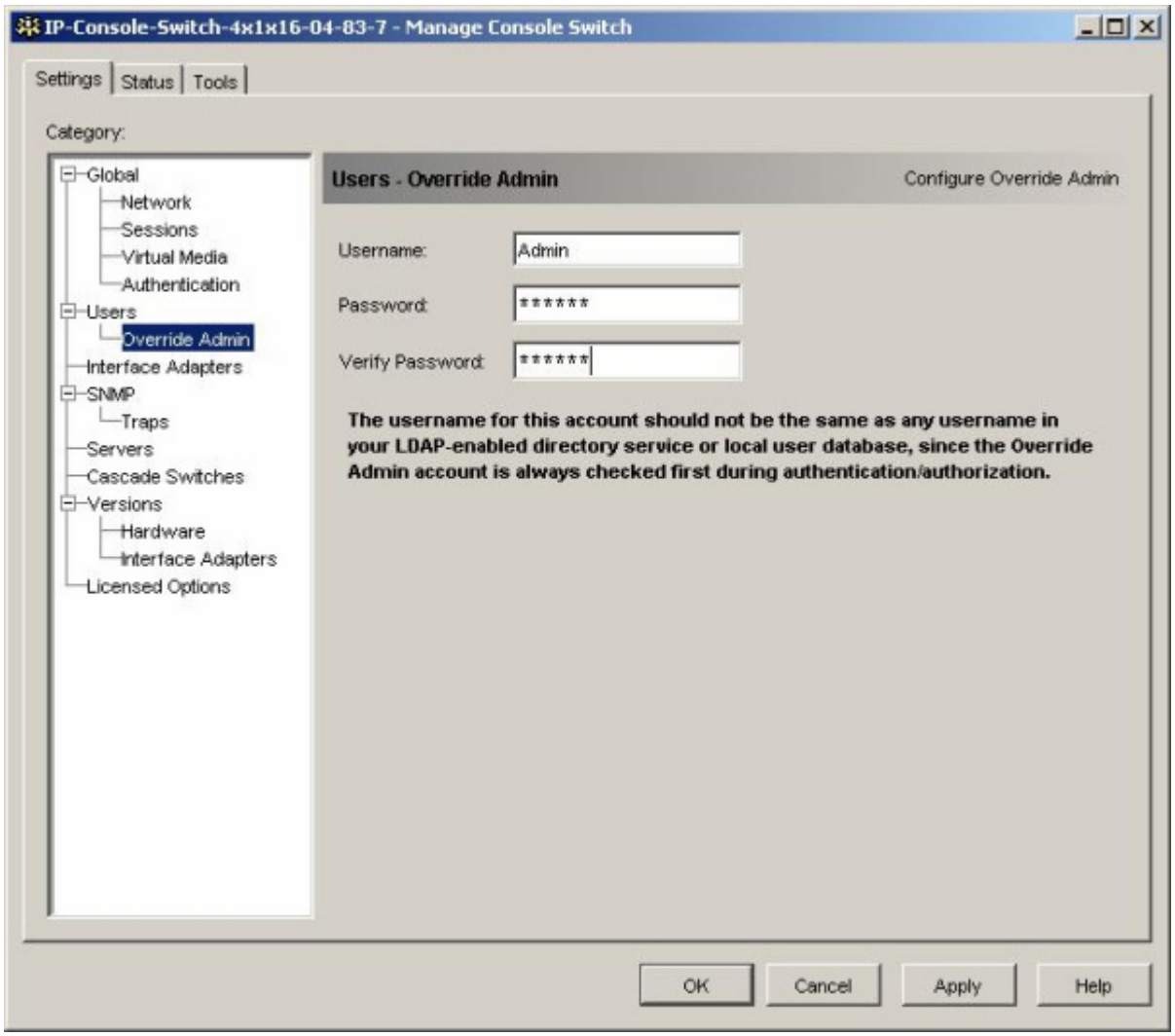
1. Select **Users.**
2. Select **Enable Lock-outs.**

3. Enter the number of hours that a user is locked out (1 to 99) in the Duration field.
4. Click **Apply,** and then click **OK.**

Override Admin

Override Admin is the one account that can be used to get into the console switch from a network, even if the local accounts are locked or do not exist or if LDAP is not working properly. The Override Admin account is a permanent account that cannot be deleted. It has the same access right privileges as a Console Switch Administrator. The ID and password should be closely held by authorities and should not be used as Admin or User accounts on a day-to-day basis. The Override Admin account name and password settings are accessible only to the Override Admin user. The Override Admin account authenticates only locally to the console switch and the directory.

NOTE: For 1 x 1 x16 and 3 x 1 x16 IP console switches when upgrading from a firmware version before 3.0.0, the upgrade procedure searches for an existing Console Switch Admin account named "Admin" and migrates this user name and password to be the default Override Admin account. If the user "Admin" is not found, then the default Override Admin user name will be "Admin" and the default password will not be set (empty).

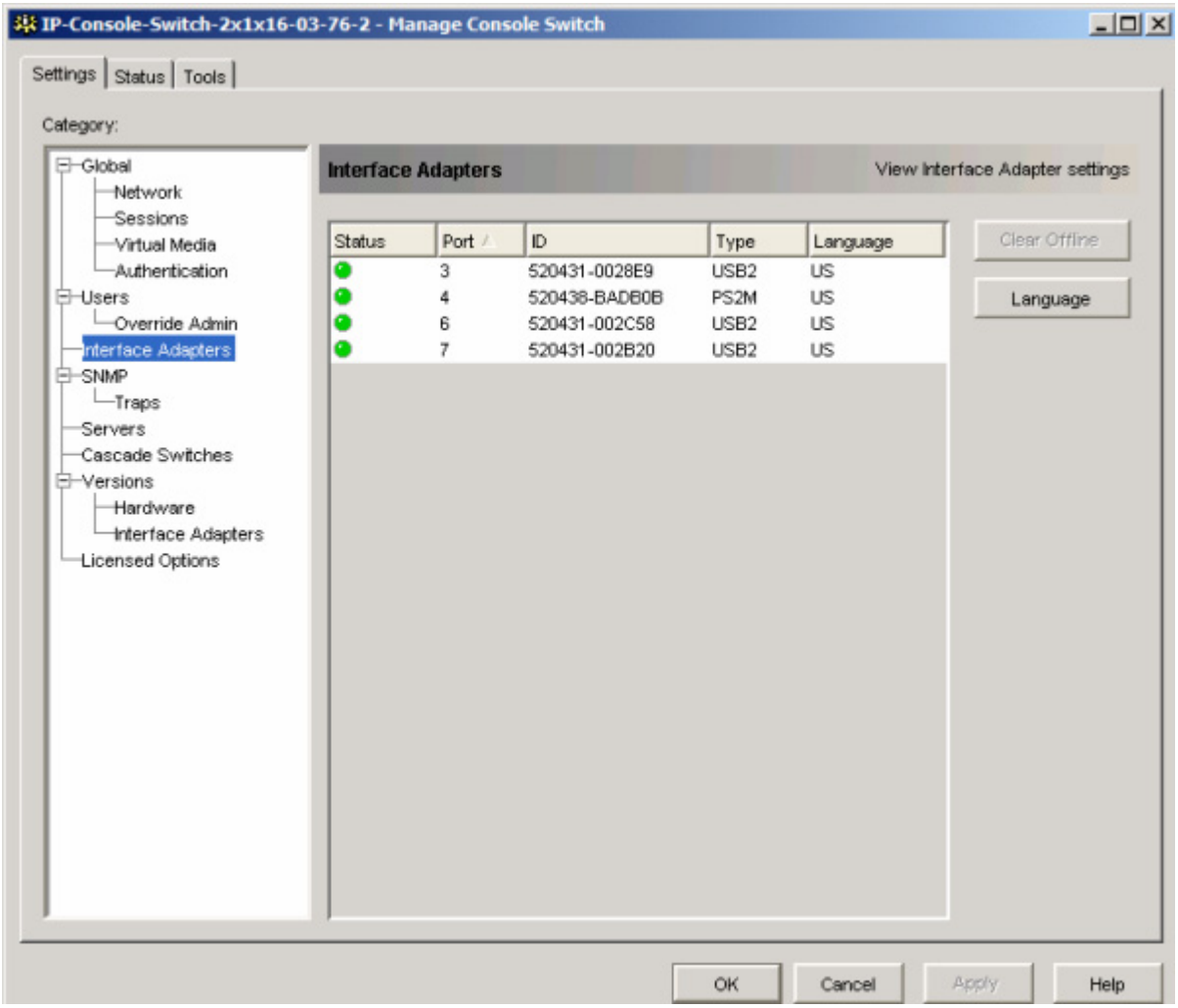


Viewing interface adapter parameters

The Interface Adapters category displays a list of interface adapters attached to the HP IP Console Switch and their statuses, as well as the port, interface adapter ID, type, and language. A green circle indicates that the interface adapter is online. A yellow circle indicates that the interface adapter is being upgraded, and a red X indicates that interface adapter is offline. To clear offline adapters, click **Clear Offline,** and then click **OK** when prompted to confirm.

NOTE: The interface adapter Status, Port, ID, Type, and Language columns can be sorted by selecting the column name.

NOTE: The Clear Offline button is only enabled if at least one interface adapter is offline.



Setting interface adapter language parameters

The Language setting specifies the keyboard layout language to be reported by USB interface adapters to the attached servers.

1. Select **Interface Adapter.**
2. Click **Language.**

3. Select the keyboard layout from the dropdown menu.

4. Click **OK** to select the keyboard layout.

   -or-

   Click **Cancel** to return without changing the language.

5. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

   -or-

   Click **Cancel** to exit without saving any changes.

All online interface adapters report in the new language.

Configuring SNMP parameters

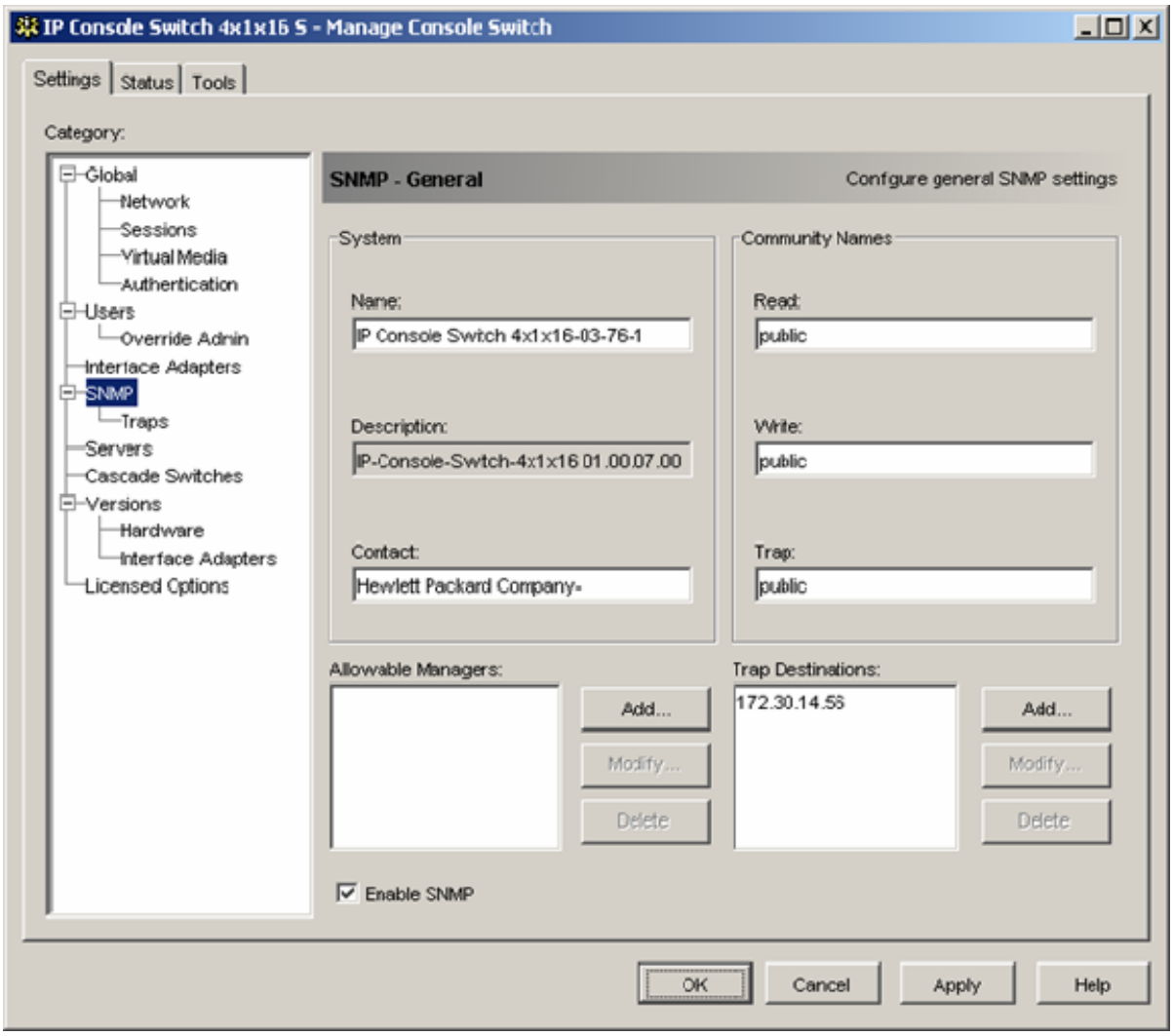
SNMP is a protocol used to communicate management information between network management applications and console switches. Other SNMP managers can communicate with your console switch by accessing MIB-II and the public portion of the enterprise MIB. MIB-II is a standard MIB that many SNMP servers support.

When you select the SNMP category for the first time, the Manage Console Switch window retrieves the SNMP parameters from the console switch. The SNMP category enables you to enter system information and community strings, designate the management stations that can manage the console switch, and retrieve SNMP traps from the console switch. If you select Enable SNMP, the console switch responds to SNMP requests over UDP port 161. Port 161 is the standard UDP port used to send and retrieve SNMP messages.

NOTE: The Manage Console Switch window uses SNMP within a secure tunnel to manage console switches. For this reason, UDP port 161 must be open on firewalls. You must expose UDP port 161 to monitor console switches through third-party SNMP-based management software.

Up to four allowable managers can be defined, and all IP addresses are defined as blank by default. If all four entries are left blank, all IP addresses are authorized to read and write to the console switch, provided that they have the correct SNMP community strings. If any of the SNMP allowable manager entries are not blank, then only the defined SNMP allowable managers have access.

The allowable managers setting does not affect whether the HP IP Console Viewer can view or manage the console switch.



Configuring general SNMP parameters

1. Select **SNMP.**
2. Select **Enable SNMP** to configure the console switch to respond to SNMP requests over UDP port 161.
3. In the System section, enter the fully qualified domain name of the system in the Name field, a description in the Description field, and a contact person in the Contact field.

IMPORTANT: If you are using LDAP or are planning to use LDAP in the future, the name in the Name field must match the computer name that represents the console switch in the Active Directory.

4. Enter the community names in the **Read, Write,** and **Trap** fields. These specify the community strings that must be used in SNMP actions. The read and write strings apply only to SNMP over UDP port 161 and act as passwords that protect access to the console switch. The values can be up to 64 characters in length.
5. Add up to four SNMP management stations that are allowed to monitor the console switch, such as HP Systems Insight Manager, or leave the field blank to allow any SNMP management station to manage the console switch. For more information, see "Adding, modifying, and deleting allowable managers (on page 53)."

6. Add up to four SNMP trap destinations to which this console switch sends traps and in the Trap Destination field. For more information, see "Adding, modifying, and deleting trap destinations (on page 53)."
7. Click **OK** to save the settings and close the window.

   -or-

   Click **Apply** to save the settings and remain in the open window.

   -or-

   Click **Cancel** to exit the window without saving.

Adding, modifying, and deleting allowable managers

In the Allowable Managers area, you can specify up to four SNMP management entities to monitor this console switch or leave this area blank to allow any station to monitor the console switch. You can also modify or delete an existing allowable manager.

To add an Allowable Manager:

1. Click **Add.** The Allowable Manager dialog box appears.
2. Enter the IP address of the management station.
3. Click **OK** to add the management station.

To modify an Allowable Manager:

1. Select and entry in the Allowable Managers list, and click **Modify.** The Allowable Manager dialog box appears.
2. Modify the entry as needed.
3. Click **OK** to save the changes.

To delete an Allowable Manager:

1. Select an entry in the Allowable Managers list, and click **Delete.** You will be prompted to confirm the deletion.
2. Click **Yes** to confirm the deletion.

Adding, modifying, and deleting trap destinations

In the Trap Destinations area, you can specify up to four SNMP trap destinations to which this console switch sends traps. You can also modify and delete existing trap destinations.

To add a trap destination:

1. Click **Add.** The Trap Destination dialog box appears.
2. Enter the IP address of the trap destination.
3. Click **OK** to add the trap destination.

To modify a trap destination:

1. Select an entry in the Trap Destination list, and click **Modify.** The Trap Destination dialog box appears.
2. Modify the entry as needed.
3. Click **OK** to save the changes.

To delete a trap destination:

1. Select an entry in the Trap Destinations list, and click **Delete.** You are prompted to confirm the deletion.
2. Click **Yes** to confirm the deletion.

Configuring a cascade switch connection

1. Select the **Cascade Switches** category.
2. Click the **Cascade Switch** dropdown list next to the ID column, select the cascade switch you want to configure, and select the console switch type you want to assign.

   If the console switch is not in the dropdown list, add a console switch to the Existing Cascade Switches list by clicking **Add.** The Add Console Switch dialog box appears.

   a. Enter the name of the console switch, and select the console switch type from the list.

   b. Click **OK** to add the console switch. The console switch is now in the Existing Switches list and in the Cascade Switches dropdown list.
3. Repeat step 2 for each interface adapter.
4. When finished, click **Apply>OK** to save the new settings.

   -or-

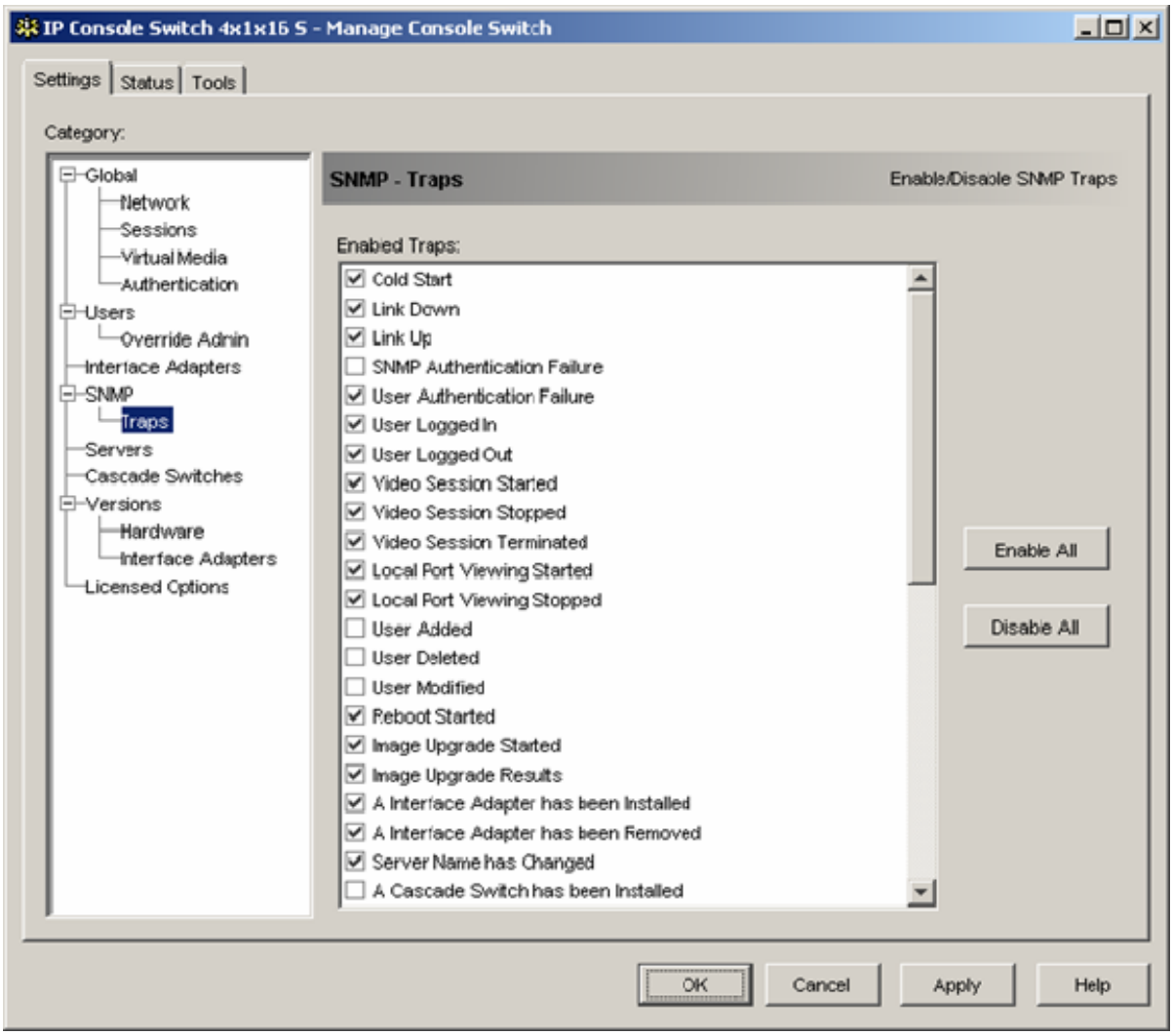
   Click **Cancel** to close without saving.

Configuring trap parameters

An SNMP trap is a notification sent by the console switch to a management station to indicate that an unusual event has occurred in the switch that might demand further attention. You can specify what SNMP traps are sent to the management stations by clearing or selecting the appropriate checkboxes in the list (the SNMP Authentication Failure Trap is not selected by default).

When you select the Traps category for the first time, the Manage Console Switch window retrieves and displays a list of SNMP traps from the console switch. You can select Enable All or Disable All to easily select or clear the entire list.

NOTE: The CPQKVM.MIB file is provided on the HP IP Console Viewer CD to be used with HP Systems Insight Manager or other SNMP management stations to properly receive SNMP traps.

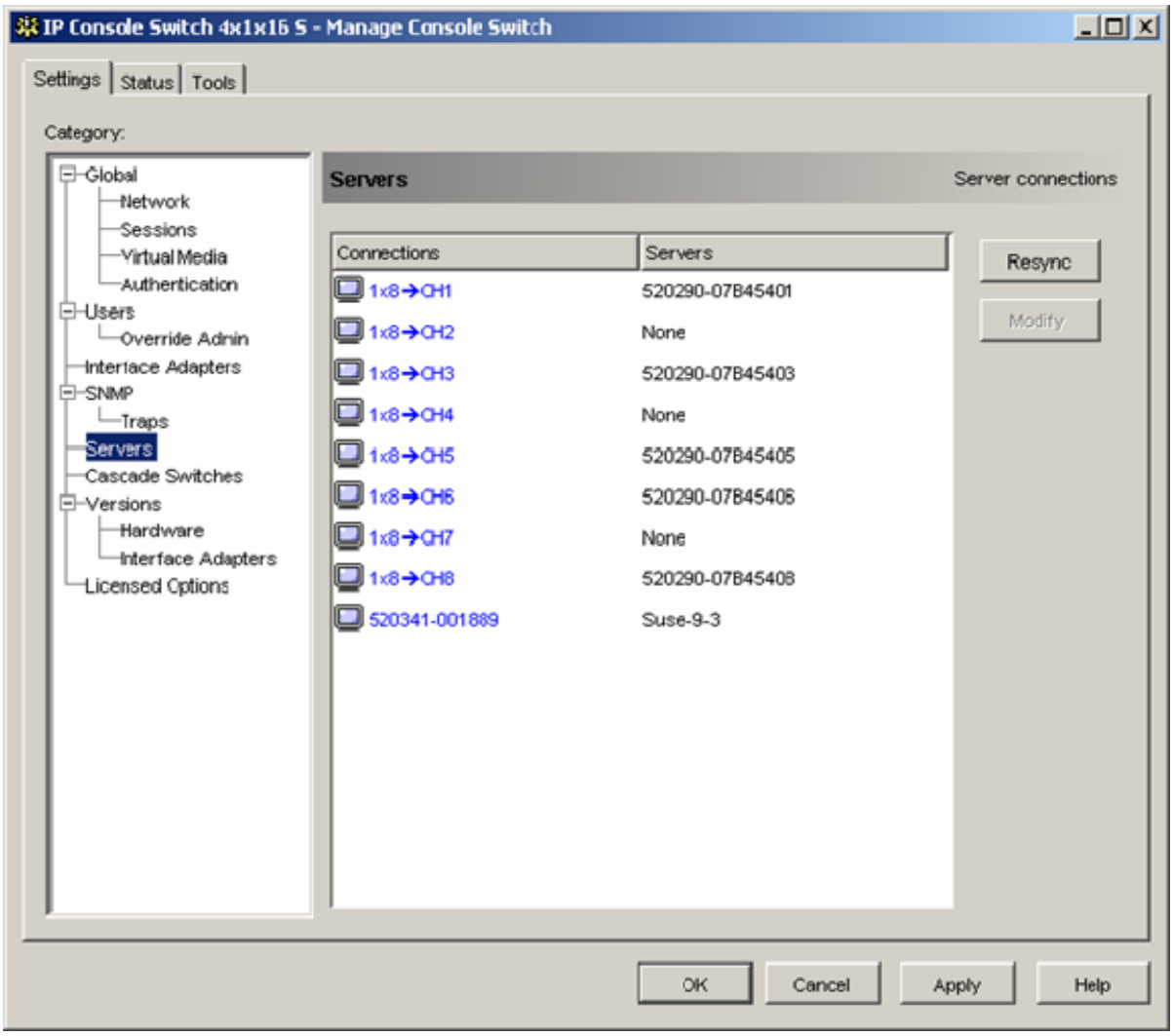


Viewing server parameters

When you select the Servers category for the first time, the Manage Console Switch window retrieves the servers that exist in the HP IP Console Viewer database and information on how the servers are connected to the selected console switch. The Servers category enables you to view the list of newly detected servers and update the HP IP Console Viewer database.

The Connections column displays the current server connection to either an interface adapter or a cascade switch. If the server is connected to an interface adapter, then the interface adapter ID displays in the connection column. If the server is connected to a cascade switch, the cascade switch and all its channels are displayed.

If you select either an interface adapter or a cascade switch in the Connections column, the Video Session Viewer appears.



Modifying server names

The Servers category can be used to modify the server name on the console switch and in the client database.

1. Select **Servers.**
2. Highlight the server that you want to modify. You can modify only one server at a time.
3. Click **Modify.** The pop-up window lists the current name of the server as stored in both the console switch and the client database (not necessarily the same).
4. Enter the new name of the server in the New Name field.
5. Click **OK** to change the server name.

   -or-

   Click **Cancel** to keep the server name as is.
6. Repeat steps 1 through 5 for every server name that you want to change.
7. Click **Apply** to save any changes.

   -or-

Click **OK** to save any changes and exit.

-or-

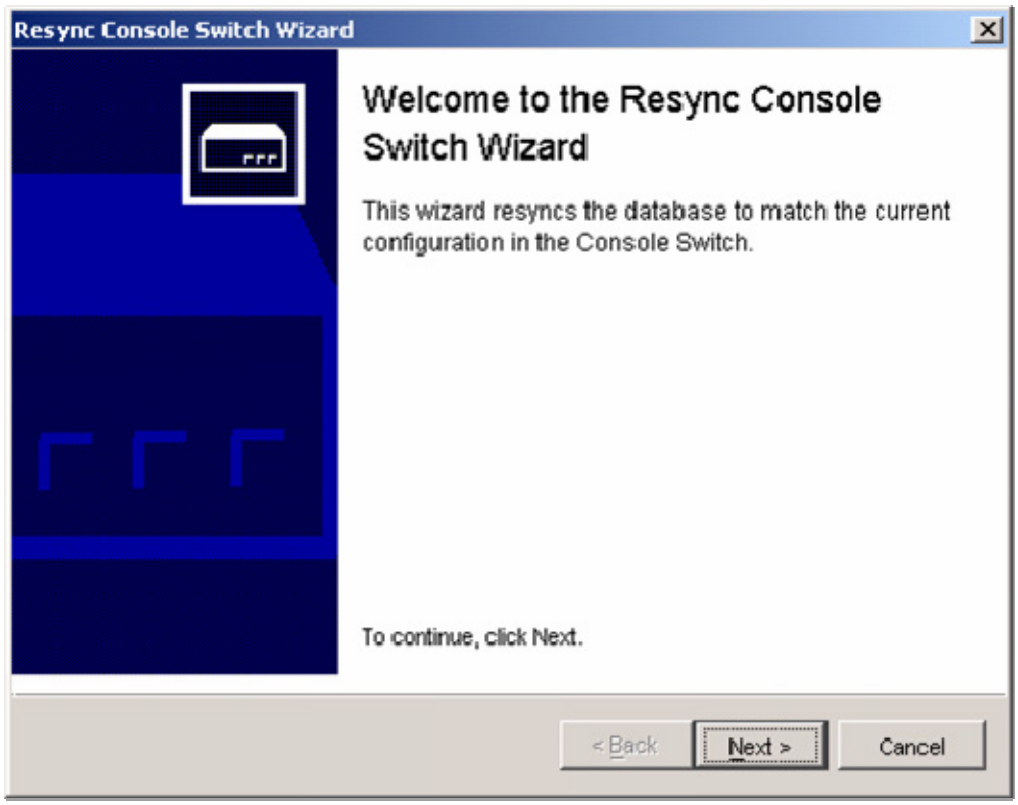
Click **Cancel** to exit without saving any changes.

Resynchronizing the server listing for console switches

You can choose to periodically resynchronize the database on the HP IP Console Viewer client with the database stored in the console switch. You can resynchronize if the local analog workstation has changed server names or the interface adapters have been added, deleted, or moved.

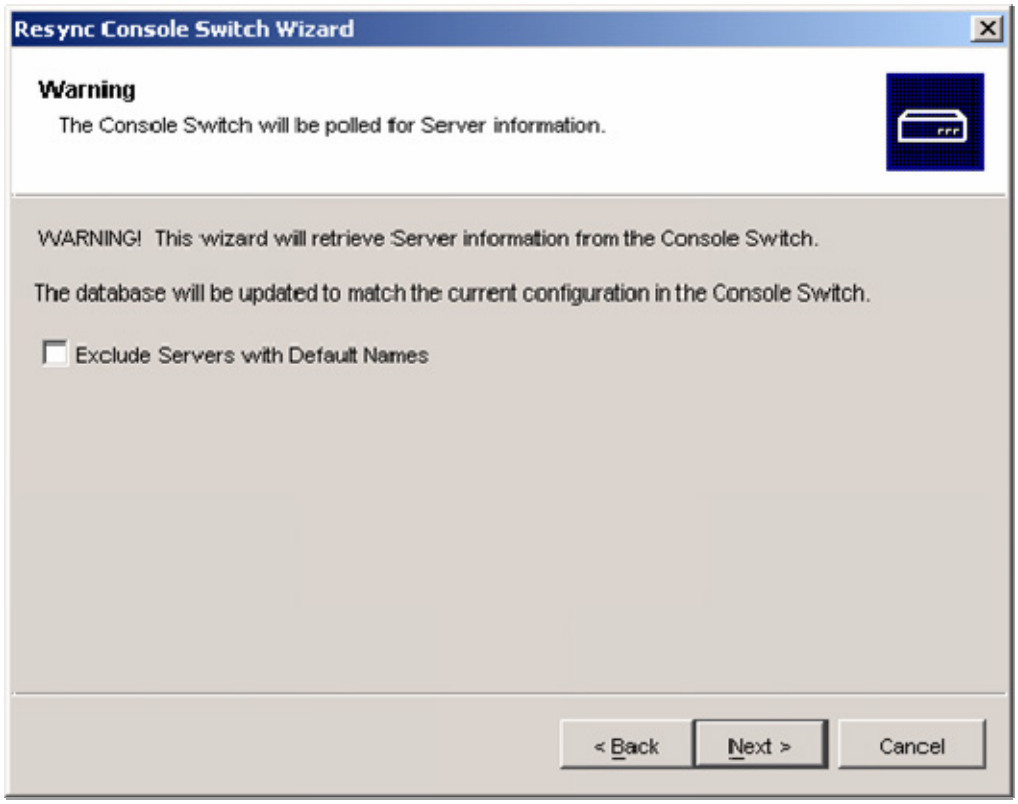
NOTE: This procedure resynchronizes only the HP IP Console Viewer client that you use to resynchronize. If you maintain multiple HP IP Console Viewer clients, save your resynchronized local database, and load it into the other HP IP Console Viewer clients to ensure consistency.

1. Click **Resync.** The Welcome to the Resync Console Switch Wizard window appears.


Resync Console Switch Wizard
Welcome to the Resync Console Switch Wizard
This wizard resyncs the database to match the current configuration in the Console Switch.
To continue, click Next.
< Back
Next >
Cancel

2. Click **Next.** The Warning window appears.

3. (Optional) Select the **Exclude Servers with Default Names** checkbox.

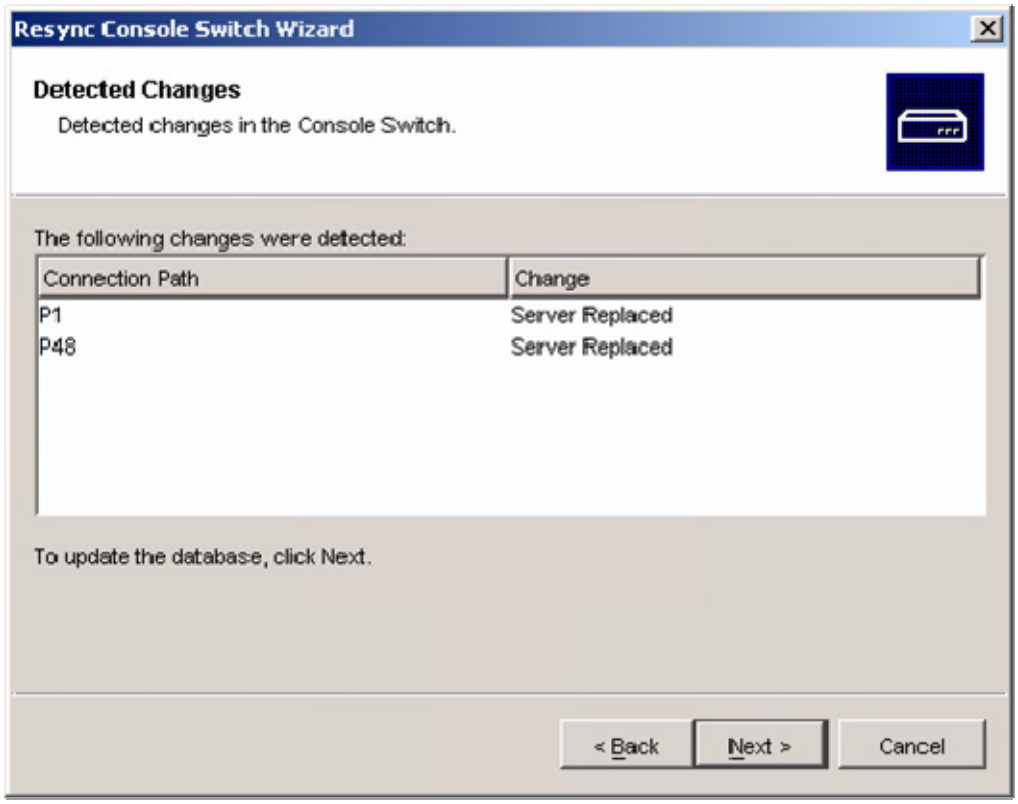

Resync Console Switch Wizard
Warning
The Console Switch will be polled for Server information.
WARNING! This wizard will retrieve Server information from the Console Switch.
The database will be updated to match the current configuration in the Console Switch.
Exclude Servers with Default Names
< Back
Next >
Cancel

4. Click **Next.** A progress bar appears, indicating that the console switch information is being reviewed.

   If no cascade switches attached to any interface adapters were detected, then the Completing the Resync Console Switch Wizard page appears. Click **Finish** to exit.

   -or-

If any changes were detected, the Detected Changes window appears.

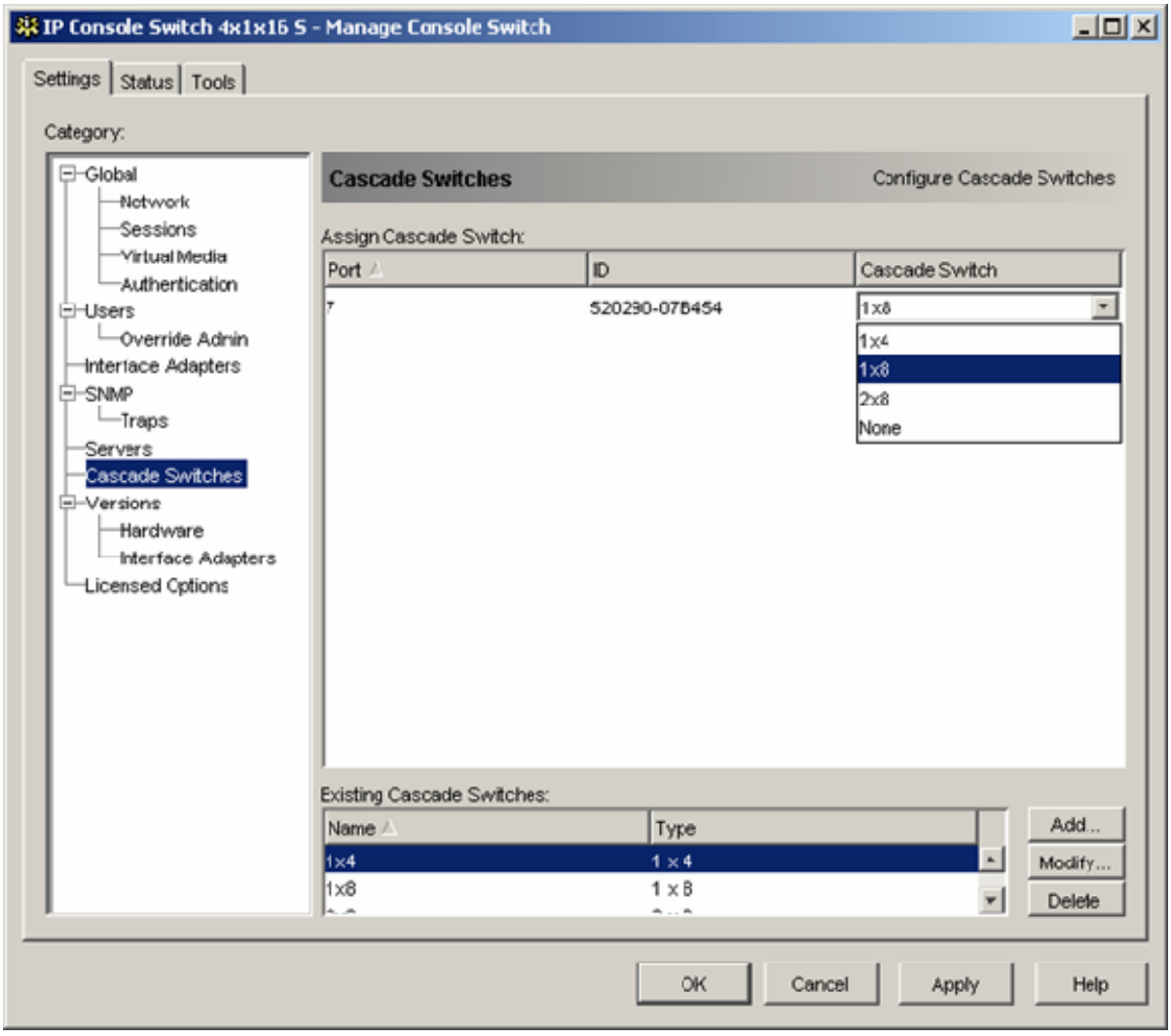


5. Click **Next** to update the database.

   If a cascade switch attached to at least one interface adapter is detected, then the Enter Cascade Switch Information window appears. Select the type of cascade switch connected to the console switch from the dropdown menu. If the type you are looking for is not available, you can add it by clicking **Add.** For more information, see the "Configuring cascade switch parameters (on page 60)."
6. Click **Next.** The Completing the Resync Console Wizard window appears.
7. Click **Finish** to exit.

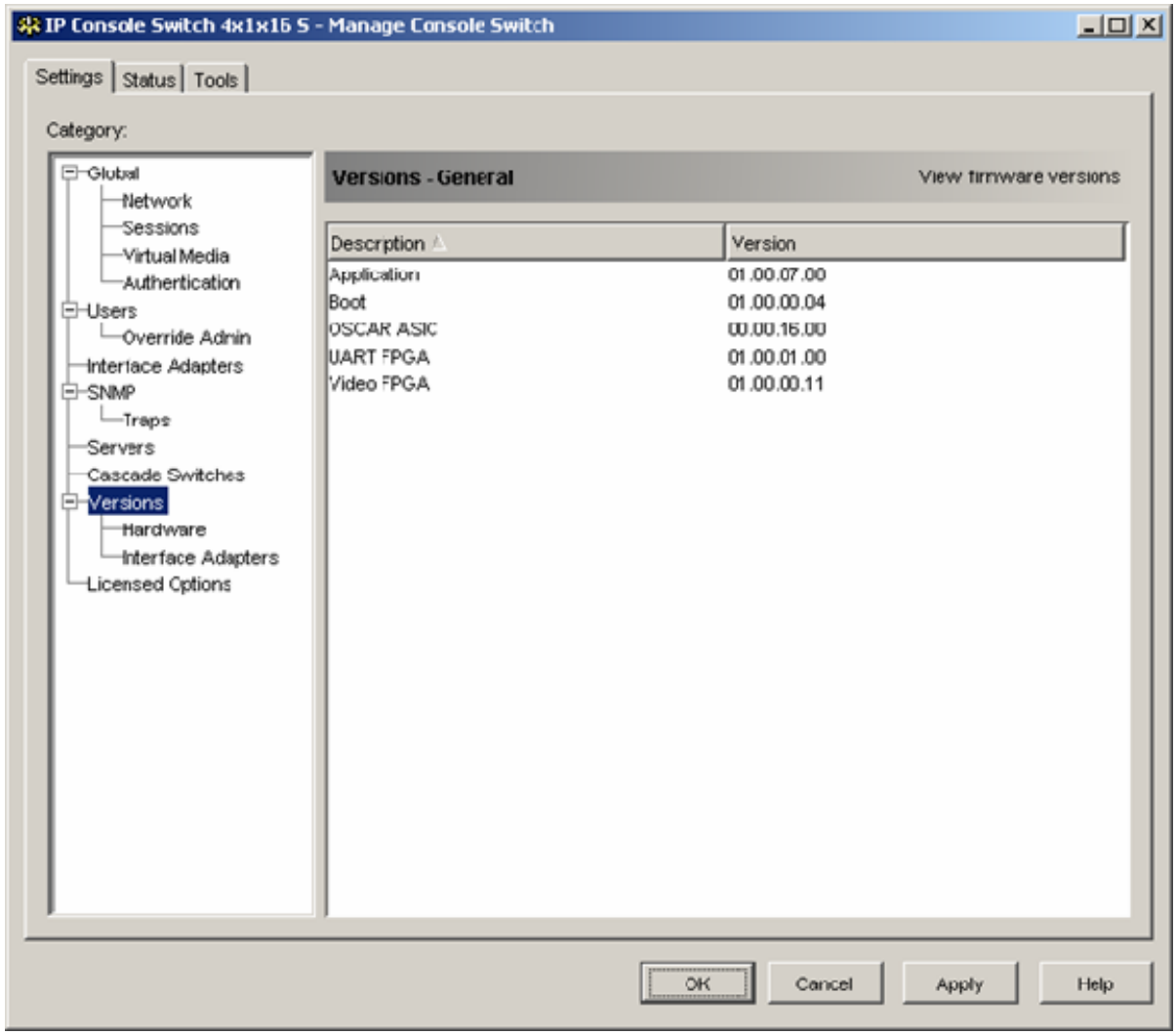
Configuring cascade switch parameters

The Cascade Switches category enables you to view, modify, and add cascade switch information into the HP IP Console Viewer database. The Assign Cascade Switch list displays only interface adapter IDs currently attached to a cascade switch in the database.



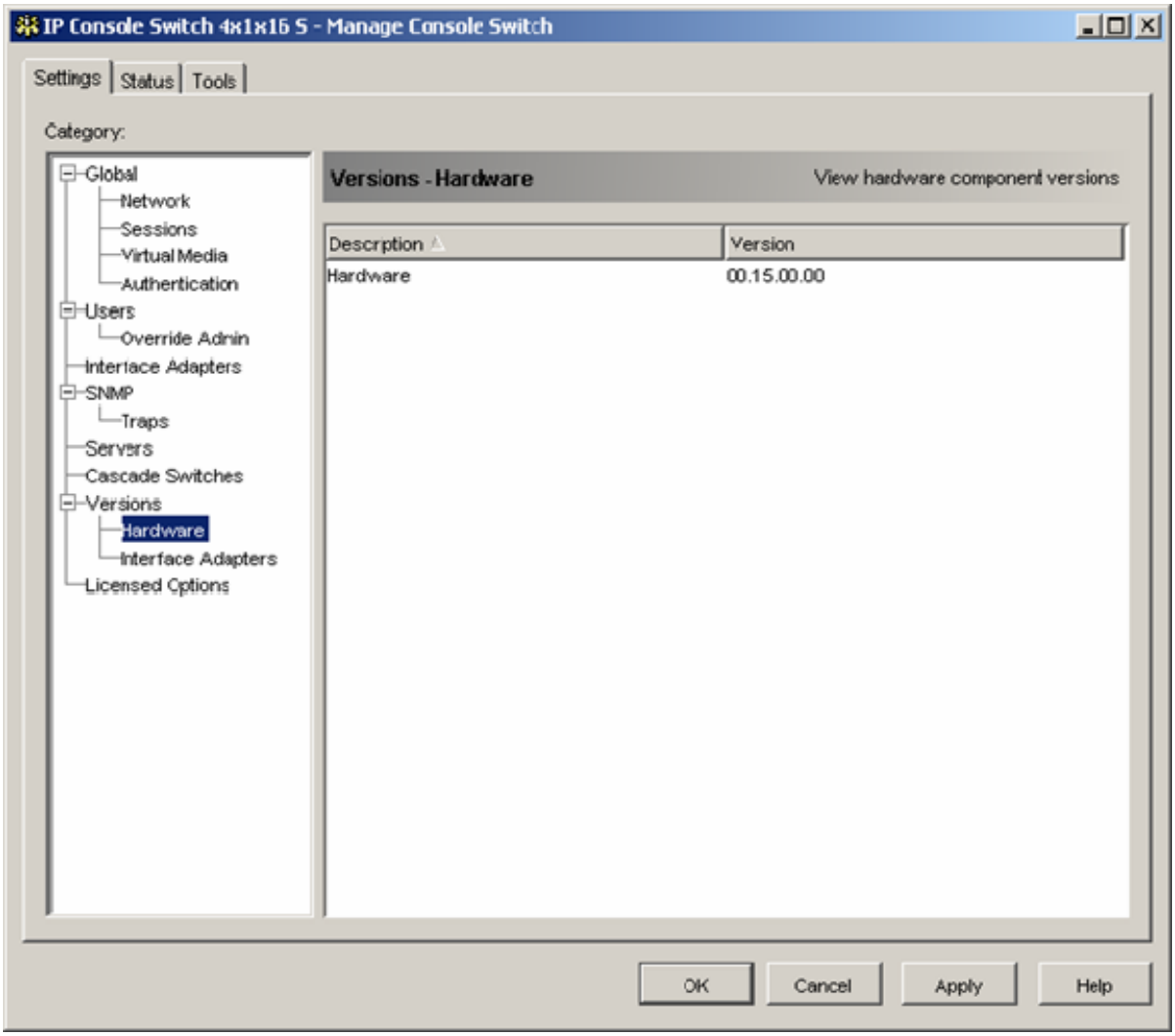
Viewing version parameters

When you select the Versions category for the first time, the Manage Console Switch window retrieves the firmware versions from the console switch itself. The Hardware subcategory displays the version information for the console switch itself. The Interface Adapter subcategory enables you to view and load all the interface adapters in the system.



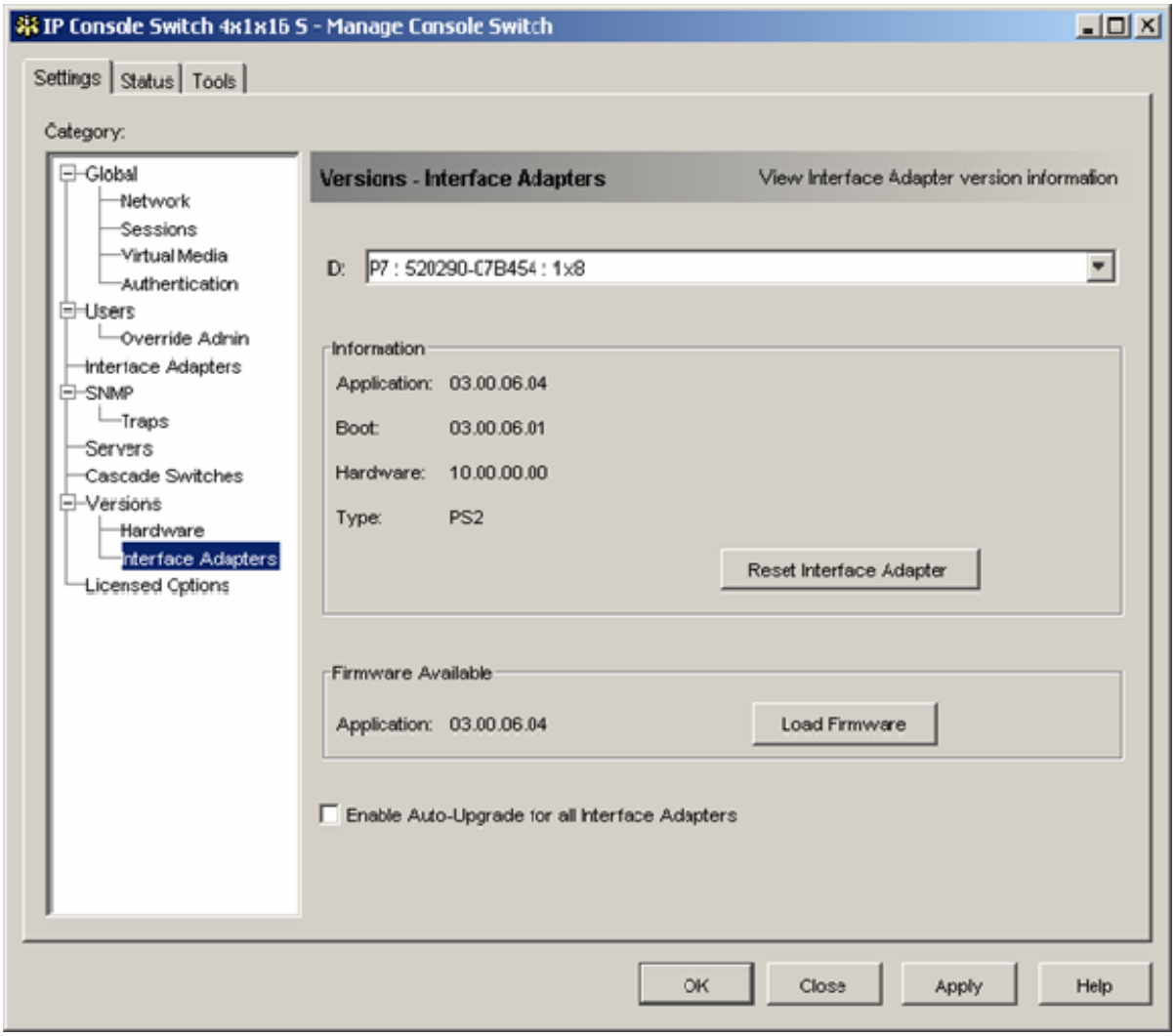
Viewing hardware version parameters

The Hardware subcategory displays the version information for the console switch itself.



Viewing interface adapter version parameters

The Interface Adapter subcategory enables you to view and load all the interface adapters in the system.



Enabling automatic interface adapter firmware upgrades

For HP IP Console Switches with Virtual Media, you can set the console switch to upgrade the interface adapter firmware automatically.

1. Select **Interface Adapters.**
2. Enable the **Enable Auto-Upgrade for all Interface Adapters** checkbox.
3. Click **Apply,** and then click **OK.**

Manually loading and upgrading the interface adapter firmware

The interface adapter firmware can be loaded individually from the Settings tab, or it can be upgraded simultaneously from the Tools tab ("Using the Tools tab" on page 67). When a load is initiated, a message appears, indicating the current status. When a load is in progress, you cannot initiate another.

NOTE: This method of loading the interface adapter firmware will always overwrite the current version of firmware in the interface adapter. HP recommends using the Tools tab to upgrade your interface adapter

firmware, which will only upgrade interface adapters needing a new version of firmware. For more information, refer to the "Using the Tools tab" section in this chapter.

1. Select **Interface Adapters.**
2. Select the **ID** dropdown list, and select the interface adapter for which you would like to view firmware information.

   The IDs displayed in the dropdown list are a combination of the IDs and either the server names or console switch names, depending on what is attached to the interface adapter. If the interface adapter is not attached to anything, the dropdown list displays None.

   After the interface adapter is selected, the firmware information appears in the Information box.
3. Compare the contents of the Information box to the Firmware Available box to see the firmware version available to the interface adapter. If the interface adapter requires upgrading, click **Load Firmware.** During the load process, the progress message appears below the Firmware Available dialog box and the Load Firmware button deactivates. When the load is complete, a message appears, confirming the upgrade.
4. Repeat steps 3 through 4 for each interface adapter upgrade.
5. When finished, click **OK.**

Resetting an interface adapter

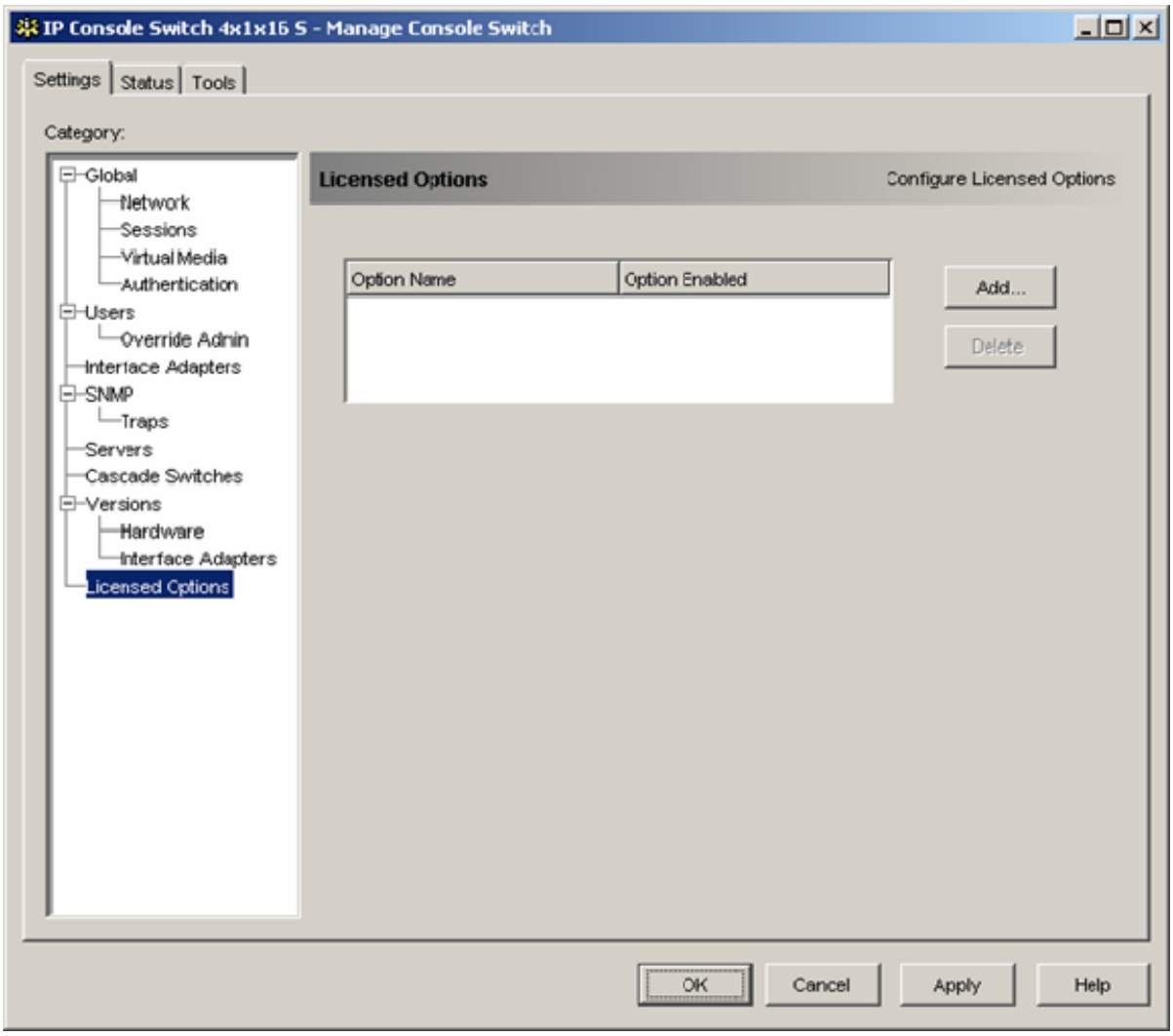
On occasions when a cascaded legacy console switch is not recognized by the console switch, it might be necessary to reset the interface adapter that connects the cascade switch to the console switch. To perform this action, use the Reset Interface Adapter button in the interface adapter Version subcategory.

NOTE: The Reset Interface Adapter button is only enabled when the interface adapter type is PS2 and when a firmware upgrade is not in progress.

1. From the Interface Adapter subcategory, select the interface adapter you want to reset from the ID list.
2. Click **Reset Interface Adapter.** A message appears, warning you that this function is reserved for cascade switches and that resetting the interface adapter might result in the need to reboot the attached server.

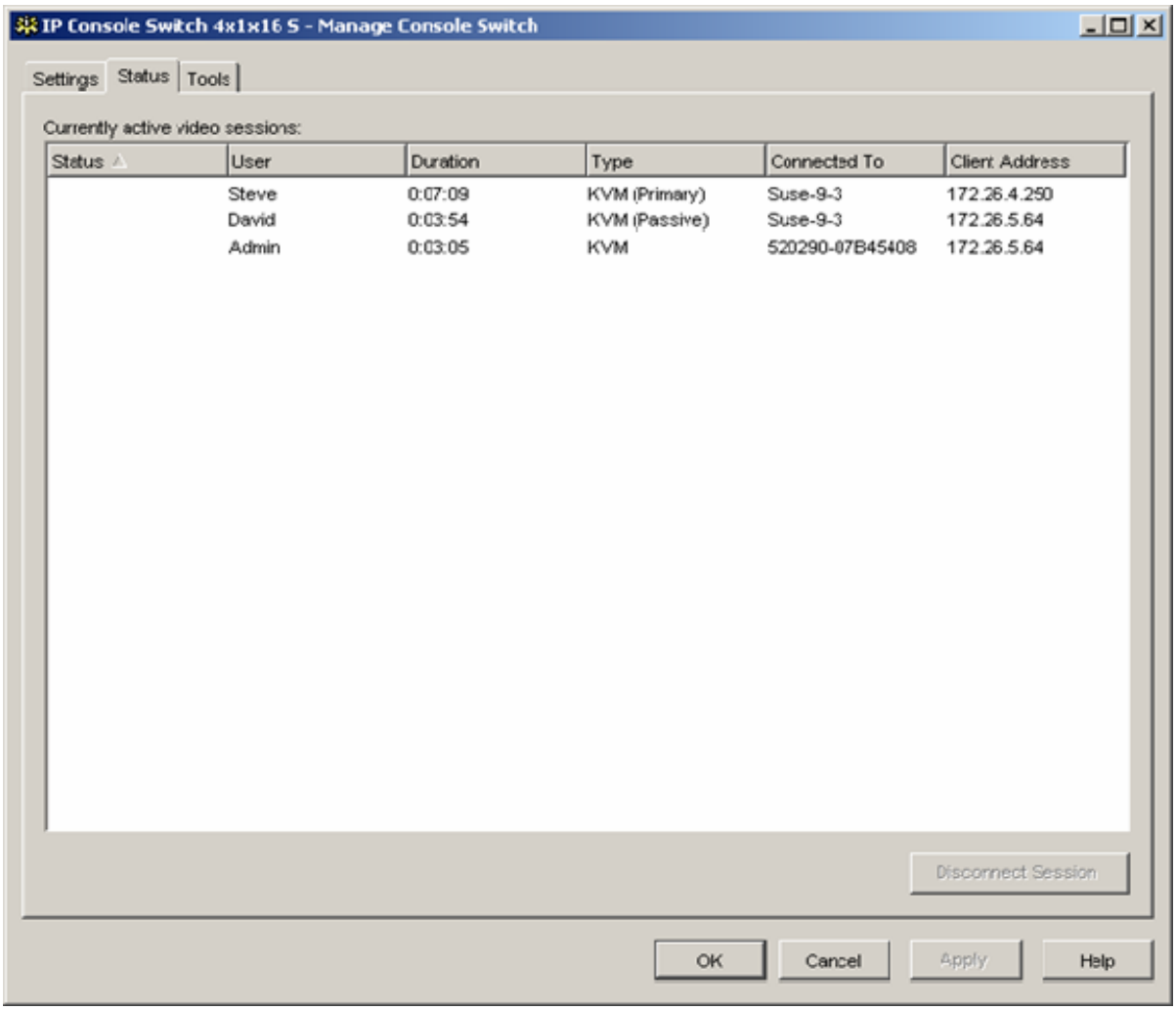
Viewing licensed options

When you click Licensed Options in the Management Console Switch window, the Licensed Options window appears and enables you to configure options for use that are available on the console switch firmware. The HP IP Console Switches with Virtual Media and the HP Serial Console Servers (serial console switches) have the LDAP Authentication option enabled by default. The Licensed Options window lists each option available on the console switch and if the option has been enabled by a license key. For more information on adding a license key, see "Enabling directory services integration (on page 186)."



Viewing the Status tab

You can view and disconnect the current active user connections and unlock user accounts by using the Status tab in the Manage Console Switch window. You can view the length of time users have been connected, the server names or interface adapter to which they are connected, and their system addresses.



Disconnecting user session

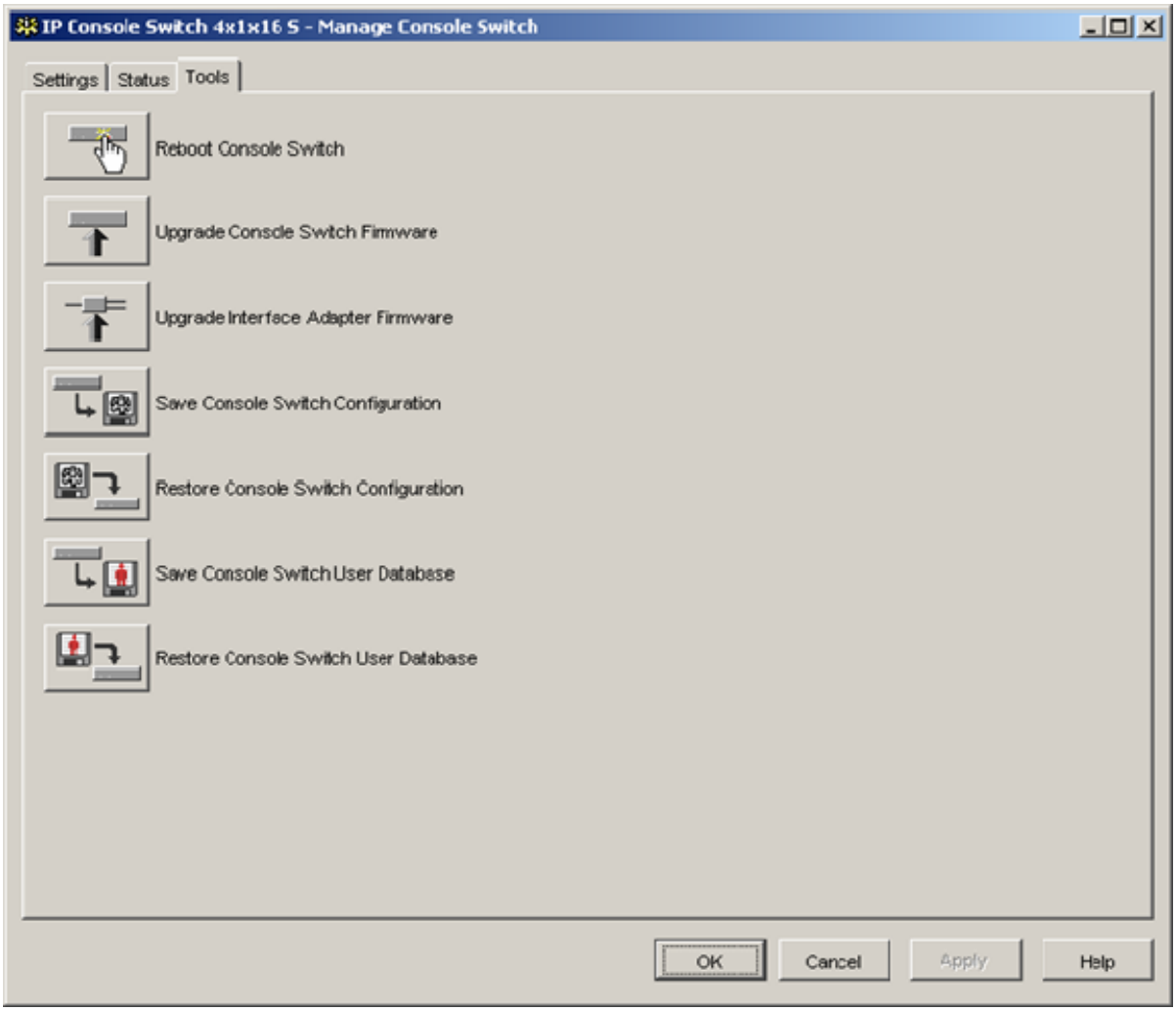
1. Click **Status.** The currently active video sessions window appears.
2. Select one or more users to disconnect.
3. Click **Disconnect Session.** The Confirm Disconnect dialog box appears.
4. Click **Yes** to confirm the disconnection.

   -or-

   Click **No** to exit without completing the disconnect command.

Using the Tools tab

The Tools tab enables you to reboot, upgrade firmware, and save and restore both configuration and user database files.



Rebooting the console switch

You can reboot the console switch using the Tools tab on the Manage Console Switch window. Clicking the Reboot Console Switch button causes the console switch to broadcast a disconnect message to any active users, then logs out the current user, and immediately reboots the console switch.

IMPORTANT: You must wait a minimum of 60 seconds after powering up to complete the boot cycle before performing any console switch operations. Attempting to access servers during the boot process might cause system errors that require a hardware reboot.

To reboot the console switch:

1. Click **Tools.**
2. Click **Reboot Console Switch.** A reboot warning appears.
3. Click **Yes.**

Wait 60 seconds after powering up before performing any console switch operations.

Upgrading console switch firmware

You can upgrade the console switch firmware by using TFTP or File System.

The interface adapter can be upgraded individually in the Settings tab or simultaneously in the Tools tab.

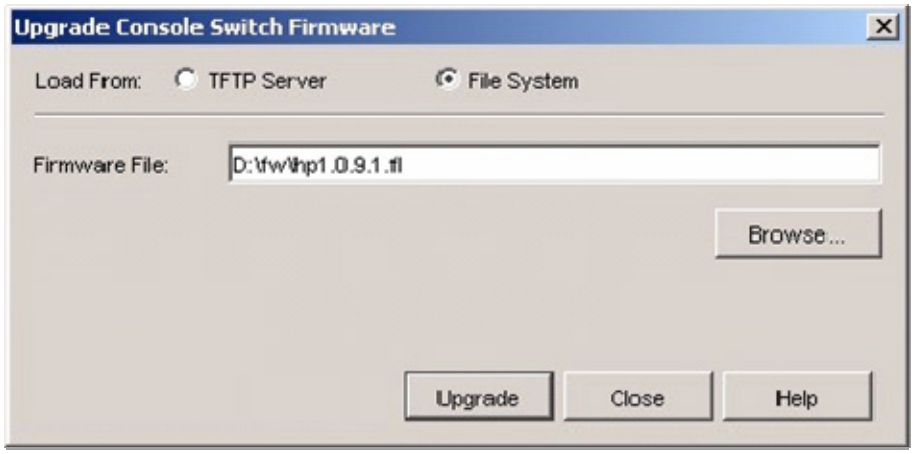
NOTE: If you made changes in the Settings tab of the Manage Console Switch window, but have not yet applied those changes before starting the upgrade, a warning message prompts you to confirm the upgrade because the upgrade process requires that the console switch be rebooted. If you do not apply the changes, they are discarded before upgrading the firmware.

To perform TFTP downloads, TFTP must be enabled.

CAUTION: Do not power down the console switch while it is upgrading. This process can take up to 10 minutes to complete.

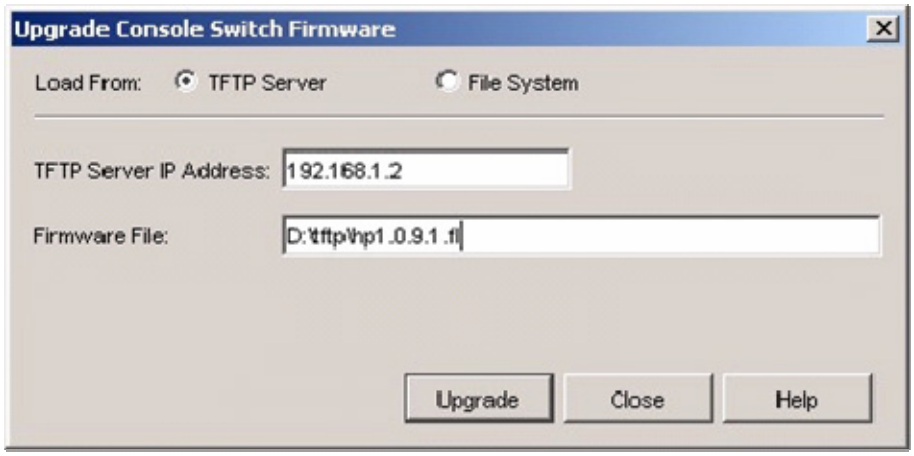
1. Click **Tools.**
2. Click **Upgrade Console Switch Firmware.** The Upgrade Console Switch Firmware dialog box appears.
3. Select **TFTP Server** or **File System.**

   If you enabled File System, enter the firmware file name, or browse to the location where the firmware is located.



-or-

If you enabled TFTP Server, enter the TFTP Server IP Address where the firmware is located, the firmware file name, and directory location.



4. Click **Upgrade.** The Upgrade button deactivates, and a progress message appears.

When the transfer is complete, a message prompting you to confirm a reboot appears. The new firmware is not used until the console switch reboots.

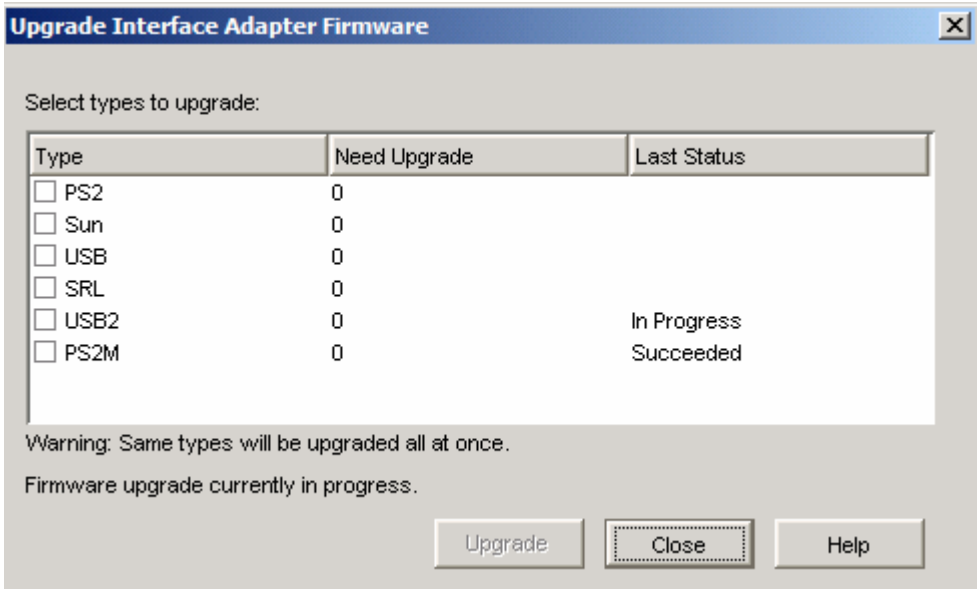
5. Click **Yes** to reboot the console switch. The Upgrade Console Switch Firmware dialog box displays a progress message, eventually indicating that the upgrade and reboot are complete. Click **Close** to exit.

   -or-

   Click **No** to reboot at a later time.

Upgrading interface adapter firmware simultaneously

1. Click **Tools.**
2. Click **Upgrade Interface Adapter Firmware.** The Upgrade Interface Adapter Firmware dialog box appears.



3. Select the checkbox in front of the type of interface adapter you want to upgrade. The checkbox in front of the type cannot be selected if all the interface adapters have current firmware.
4. Click **Upgrade.** The Upgrade button deactivates. In the Last Status column, In Progress displays until the upgrade for that interface adapter type is complete, and then Succeeded appears. A Firmware upgrade currently in progress message appears until all the selected interface adapters are upgraded.
5. Click **Close** to exit.

Managing console switch configuration files

Configuration files contain all the settings for a console switch, including network settings, interface adapter configurations, SNMP settings, and attached servers. Configuration files can also be written to new console switches, avoiding the requirement to manually configure a new console switch.

NOTE: User account information is stored in the user database, not in the configuration file, except for the Override Admin account, which is stored in the configuration file and not in the user database file. For more information, see "Managing console switch user databases (on page 71)." or "Managing serial console switch user databases. ("Managing serial console switch user databases" on page 142)"

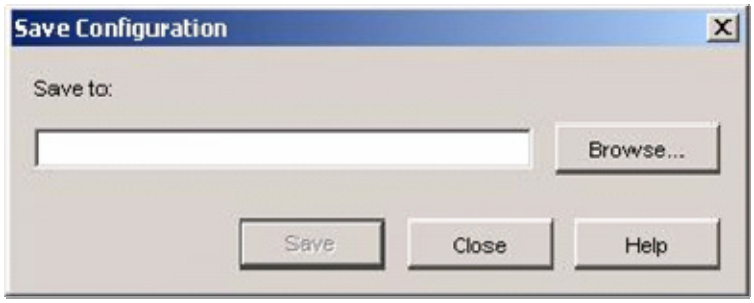
Saving a console switch configuration database

The Save Configuration tool saves the console switch database from the console switch to a file on the system running the HP IP Console Viewer.

NOTE: The file is encrypted during the save process, and you will be prompted to create a password when you save the database. You must enter this password when you restore the file.

To save a configuration from a console switch to a file:

1. Click **Tools.**
2. Click **Save Configuration.** The Save Configuration dialog box appears.



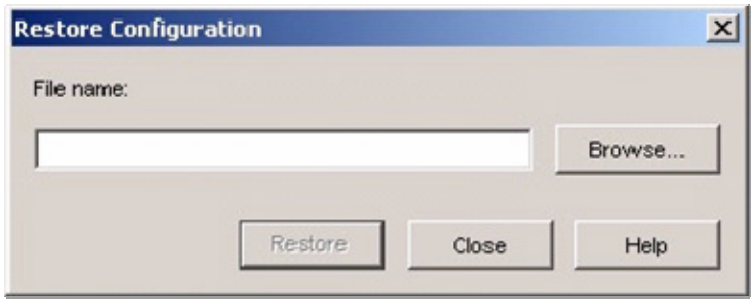
3. Click **Browse,** and select a location to save the configuration file. The location appears in the Save to: field.
4. Click **Save.** The Enter Password dialog appears.
5. Enter a password in the Password: field and re-enter it in the Verify Password: field. This password is requested when you restore this database to the console switch. Blank passwords are accepted but are not recommended.
6. Click **OK.** The console switch configuration database is read from the console switch and saved to a location. A progress message appears. When the save is complete, a confirmation message appears.
7. Click **OK** to return to the Tools tab.

Restoring a console switch configuration database

The Restore Configuration tool restores a previously saved console switch configuration database from the system running HP IP Console Viewer to the console switch. The database file can be restored to either the console switch from which it was saved or to another console switch of the same type. This eliminates the need to manually configure a new console switch.

To restore a configuration file to a console switch:

1. Click **Tools.**
2. Click **Restore Configuration.** The Restore Configuration dialog box appears.



3. Click **Browse,** and select the location of the saved configuration file. The file name and location appear in the File name: field.

4. Click **Restore.** The Enter Password dialog appears.
5. Enter the password you created when the configuration database was saved.
6. Click **OK.** The configuration file is written to the console switch. A progress message appears. When the restore is complete, a confirmation message appears.
7. Click **OK** to return to the Tools tab.

Managing console switch user databases

User database files contain all the user accounts assigned to a console switch, except for the Override Admin. You can save user account database files and use them to configure user accounts on multiple console switches by writing the user account file to the new console switch.

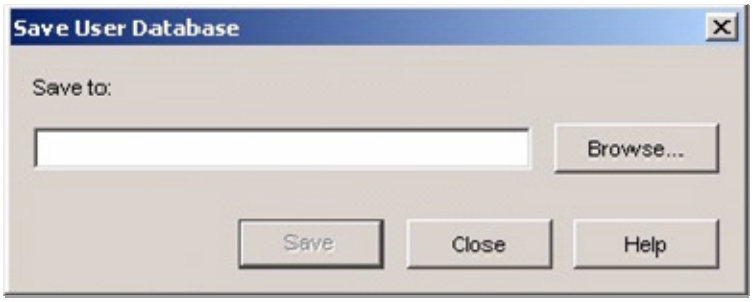
Saving a console switch user database

The Save User Database tool saves this user database from the console switch to a file on the system running HP IP Console Viewer.

NOTE: You are prompted to enter a password that will be used to encrypt the file. It does not matter if you are restoring to a different console switch or the same console switch. The password is required to read (decrypt) the file to be restored.

To save a user database from a console switch to a file:

1. Click **Tools.**
2. Click **Save User Database.** The Save User Database dialog box appears.



3. Click **Browse,** and select a location to save the user database file. The location appears in the Save to: field.
4. Click **Save.** The Enter Password dialog box appears.
5. Enter a password in the Password: field and re-enter it in the Verify Password: field. The configuration file is read from the console switch and saved in the desired location. A progress window appears. Blank passwords are accepted but not recommended.
6. Click **OK.** The user database is read from the console switch and saved to a location. A progress message appears. When the save is complete, a confirmation message appears.
7. Click **OK** to return to the Tools tab.

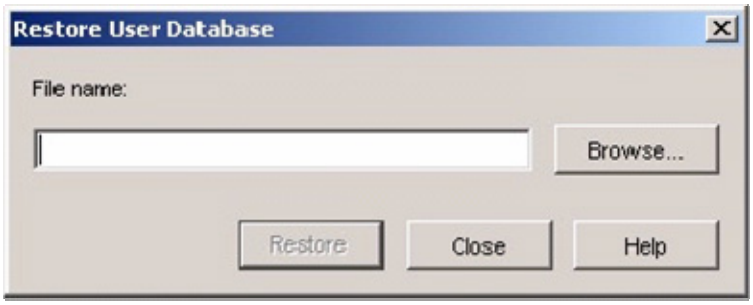
Restoring a console switch user database

The Restore User Database tool restores a previously saved user configuration database from the system running the HP IP Console Viewer to the console switch. The database file can be restored to either the console switch from which it was saved or to another console switch of the same type. This eliminates the need to manually configure users on a new console switch.

To restore a user database file to a console switch:

1. Click **Tools.**

2. Click **Restore User Database.** The Restore User Database dialog box appears.



3. Click **Browse,** and select the location of the saved user database file. The file name and location appear in the File name: field.
4. Click **Restore.** The Enter Password dialog appears.
5. Enter the password you created when the user database file was saved.
6. Click **OK.** The user database file is read from the serial console switch and saved to a location. A progress message appears. When the restore is complete, a confirmation message appears.
7. Click **OK** to return to the Tools tab.

Managing remote servers through the Video Session Viewer

In this section

About the Video Session Viewer 73
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Adjusting the Video Session Viewer 81
Configuring session options 82
Selecting function buttons for the Video Session Toolbar 82
Aligning the cursors 82
Mouse tuning 83
Viewing multiple servers using Scan mode 83
Using Virtual Media (HP IP Console Switches with Virtual Media only) 87

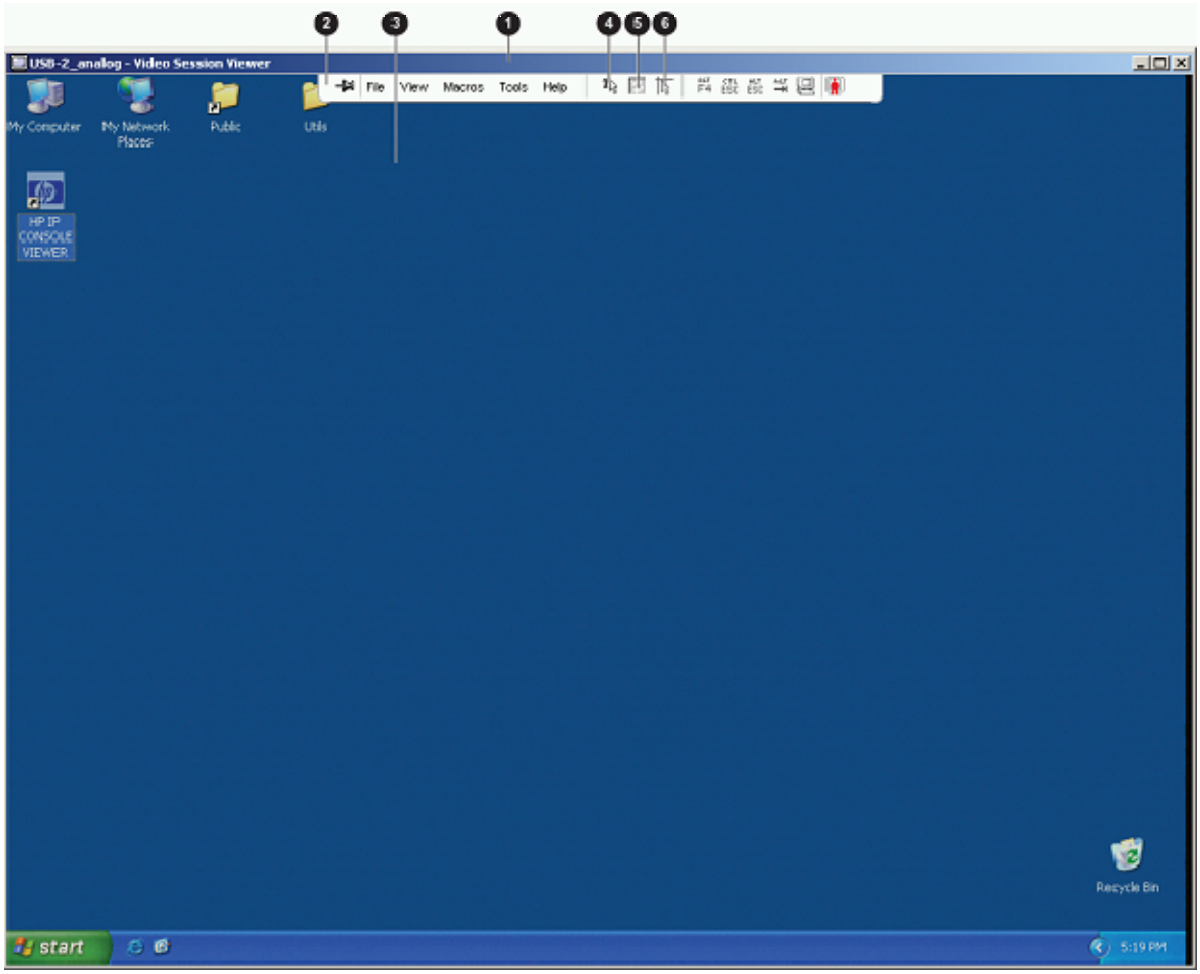
About the Video Session Viewer

After you have connected to a server, the server desktop appears in a separate window called the Video Session Viewer. You see both the local and the server cursor. You might need to align these cursors if they do not move together or adjust the video if they seem to behave sporadically. For more information on aligning cursors, see "Aligning the cursors (on page 82)."

From the Video Session Viewer, you can access all the normal functions of the server. You can also perform Video Session Viewer specific tasks, such as sending macro commands to the server.

You can also scan through a customized list of servers by enabling individual servers to display in the Thumbnail Viewer. This view contains a series of thumbnail frames, each containing a small, scaled, non-interactive version of a screen image of the server. For more information, see "Viewing multiple servers using Scan mode (on page 83)."

Video Session Viewer window



Item	Description
1	Title bar—Displays the name of the server you are viewing To access the menu bar, place your cursor in the middle bottom of the title bar.
2	Menu bar—Enables you to access features
3	Server desktop—Enables you to interact with the server through this desktop
4	Align Local Cursor icon—Enables you to reestablish proper tracking of the local cursor to the remote server cursor
5	Refresh Video icon—Enables you to regenerate the digitized video image of the server desktop
6	Full Screen mode icon—Enables you to expand the accessed server desktop to fill the entire screen

Accessing the Video Session Viewer

1. Click **Servers.**
2. Double-click the server name.

-or-

Select a server, and click **Launch KVM Session.**

-or-

Right-click the server name, and select **Launch KVM Session.**

-or-

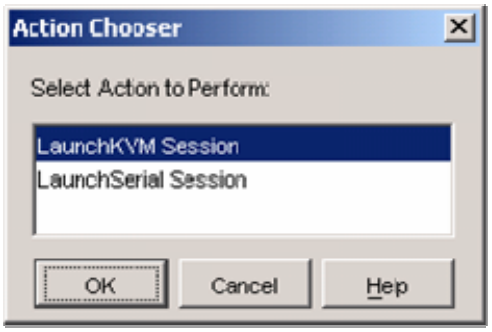
Select a server, and press **Enter.** The Video Session Viewer launches in a new window.

NOTE: If this is the first unit access of the HP IP Console Viewer session, you might be prompted for a user name and password. Requests for login credentials during subsequent access attempts are affected by the credential caching settings. For more information on cached credentials, if you have not previously entered and cached successfully, refer to "Managing cached credentials (on page 33)."

Selecting an action

If the HP IP Console Viewer receives more than one primary action for a selected unit, because it has more than one connection type, the Action Chooser dialog box appears and prompts you to select a single action from the list of possible actions to perform.

To select an action, highlight it and click **OK.**



Closing the Video Session Viewer

To close a Video Session Viewer, select **File>Exit.**

Video session types

When using the Video Viewer with console switches, you have several options of session types according to the rights of each user. You can choose to operate the KVM session to the target server in exclusive session, share a session, scan multiple servers, or monitor a server in stealth mode, depending on your access rights. Video session types affect both the display characteristics of the Video Session Viewer and the rights of other users to access the server. The current type of session is indicated by an icon displayed on the right side of the video viewer toolbar. Video session types are outlined in the following table.

Session type	Description
Normal KVM	You are conducting a normal KVM session that is not exclusive but is not currently shared. An active session icon is displayed.
Scanning	You can monitor up to 16 servers in thumbnail view.
Exclusive (HP IP Console Switches with Virtual Media only)	You have exclusive control over the target server. During this KVM session, the connection to the server cannot be shared, but it can be preempted or observed in stealth mode by an administrator.

Session type	Description
Digital share: active (primary) (HP IP Console Switches with Virtual Media only)	You are the first user to connect to the target server, and you enable secondary users to share the KVM session.
Digital share: active (secondary) (HP IP Console Switches with Virtual Media only)	You can view and interact with the target server while sharing the KVM session with a primary user and, if needed, other secondary users.
Digital share: passive (HP IP Console Switches with Virtual Media only)	You can view the video output of the target server if the primary user accepts the share request. You do not have keyboard and mouse control over the computer.
Stealth (HP IP Console Switches with Virtual Media only)	You can view the video output of the target server without the permission or knowledge of the primary user. You do not have keyboard and mouse control over the server. This session type is available for administrators only.

Using exclusive mode (HP IP Console Switches with Virtual Media only)

When operating a video session in exclusive mode, you will not receive any share requests from other users. However, administrators can choose to preempt (terminate) your session or monitor your session in stealth mode.

To enable exclusive Video Session Viewer session on a console switch:

1. Click **Console Switches.**
2. Double-click a console switch.

   -or-

   Select a console switch, and click **Manage Console Switch.**

   -or-

   Right-click a console switch, and select **Manage Console Switch** from the menu.

   -or-

   Select a console switch, and press **Enter.**
3. Select **Settings.**
4. Select **Sessions.**
5. Select **Exclusive Connections** in Connection Sharing.

To access the Video Session Viewer in exclusive mode:

1. Open a Video Session Viewer session to a server.
2. Select **Tools>Exclusive Mode** from the Video Session Viewer toolbar.

   If the Video Session Viewer is currently shared, only the primary user can designate the session as exclusive. A message notifies the primary user that secondary sessions are terminated if an Exclusive session is invoked.
3. Select **Yes** to terminate the sessions of the secondary users.

   -or-

   Select **No** to cancel the exclusive mode action.

Secondary users cannot share your Video Session Viewer session. However, administrators or users with certain access rights can still terminate your session.

Using digital share mode (HP IP Console Switches with Virtual Media only)

Multiple users can view and interact with a target device using digital share mode. You can let users share sessions as active users with keyboard and mouse control or as passive users that can view only the video output.

To configure a console switch to share a Video Session Viewer session:

1. Click **Console Switches.**
2. Double-click a console switch.

   -or-

   Select a console switch, and click **Manage Console Switch.**

   -or-

   Right-click a console switch, and select **Manage Console Switch.**

   -or-

   Select a console switch, and press **Enter.**
3. Select **Settings.**
4. Select **Network.**
5. Select **Enable Share Mode** in Connection Sharing.

NOTE: You can choose to select Automatic Sharing, which will allow secondary users to automatically share a KVM session without first requesting permission from the primary user.

To share a connection in digital share mode:

1. Click **Servers.**
2. Double-click a server.

   -or-

   Select a server, and click **Launch KVM Session.**

   -or-

   Right-click a server, and select **Launch KVM Session.**

   -or-

   Select a server, and press **Enter.**

   When another user is viewing this server, a message notifies you that the server is already involved in a KVM session.

   If the server has multiple session types enabled, you are prompted to choose the session type. If connection sharing is enabled on the console switch and your access rights are sufficient, you are prompted to either share or preempt the existing session. If the option is available, select **Share.**
3. Select **Yes** or **OK** to save and complete your request.

   If Automatic Sharing is not enabled, a share request is sent to the primary user, who can accept or reject your request and choose Passive mode.

   -or-

   Select **No** to cancel the share request.

If the primary user accepts the share request or if Automatic Sharing is enabled, a Video Session Viewer of the target server sessions open, and the indicator icon displays the session status as active or passive.

If the primary user rejects the share request, the Video Session Viewer displays the request denied message. Administrators then have the ability to close the session and attempt to connect again. The new connection attempt could be used to either preempt the session or connect in stealth mode.

NOTE: If Share is not listed as a session type or if you are not prompted to connect in share mode, the target server properties are not configured to accept digital share mode session.

Using preemption mode (HP IP Console Switches with Virtual Media only)

Preemption provides a means for users with sufficient access level to take control of a server from another (remote or local) user with lesser or equal access level. Depending on the access level of the user issuing the preemption request and that of the user being preempted, the preemption request can be rejected.

User level	Preempted by	Can the preemption be rejected?
Local User	Console Switch Administrator	Yes
Console Switch Administrator	Local User	Yes
Console Switch Administrator	Console Switch Administrator	Yes
Remote User	Local User	No
Remote User	Console Switch Administrator	No

NOTE: The Override Administrator account is treated as a Console Switch Administrator in the preceding preemption scenarios.

To preempt a local user:

1. Click **Servers.**
2. Double-click the server in the Unit list.

   -or-

   Select the server, and click **Launch KVM Session.**

   -or-

   Right-click the server. Select **Launch KVM Session.**

   -or-

   Select the server, and press **Enter.**

   When the local user is viewing this server, a message prompts you to terminate the local user's session (if you have appropriate access rights).
3. Click **Yes** to terminate the local user's connection. The local user receives a notification message. The Video Session Viewer launches.

   -or-

   Click **No** to allow the local user to retain the connection.

Using stealth mode (HP IP Console Switches with Virtual Media only)

Administrators can connect to a server in stealth mode, viewing the video output of a remote user undetected. When in stealth mode, the administrator does not have keyboard or mouse control over the target server.

To enable stealth Video Session Viewer sessions on a console switch:

1. Click **Console Switches.**
2. Double-click a console switch.

   -or-

   Select a console switch, and click **Manage Console Switch.**

   -or-

   Right-click a console switch, and select **Manage Console Switch.**

   -or-

   Select a console switch, and press **Enter.**
3. Select **Settings.**
4. Select **Sessions.**
5. Select **Stealth Connections** in Connection Sharing.

To monitor a server in stealth mode:

1. Click **Server.**
2. Double-click the server.

   -or-

   Select the server, and click **Launch KVM Session.**

   -or-

   Right-click the server, and select **Launch KVM Session.**

   -or

   Select the server, and press **Enter**.

NOTE: When the local user is viewing this server, a message notifies you that the server is already involved in a Video Session Viewer session. If the server has multiple session types available, you will be prompted to choose the session type. If the option is available, choose **Stealth.**

3. Click **Yes** or **OK.**

   -or-

   Click **No** to cancel the stealth request.

The Video Session Viewer of the target server session opens, and the administrator can view all video output of the target server while remaining undetected.

NOTE: If Stealth is not listed as a session type or if you are not prompted to connect in stealth mode, either the server properties are not configured to accept stealth mode sessions or you do not have the access rights necessary.

Connection sharing (HP IP Console Switches with Virtual Media only)

Connection sharing allows multiple users to interact with a server at the same time. When you are a primary user, you can be notified by a dialog box that another user would like to share your connection. You can click **Yes** to accept sharing, **No** to reject sharing, or **Passive Share** to allow the new user to share without having any control over the connection.

When you attempt to open a video session with a server that is already being viewed by another user, you are notified that the server is already being viewed. Depending on the configuration of sharing settings, you can be offered the option to share or preempt the video session. You can also be offered the option to open a stealth video session.

NOTE: Stealth video sessions are passive video sessions, where the primary user is not aware of the presence of the secondary user. The ability to open a stealth video session is governed by the privilege of the user. If a user can preempt another user, they can also open a Stealth video session.

Access to the server is governed by the nature of the current connection of the user to the server.

There are two types of Video Session Viewer users, a primary user and up to 11 simultaneous secondary users (a single console switch supports up to 12 simultaneous sessions across all attached servers). Only the primary user can accept or reject preemption requests for all users sharing a connection. The primary user also maintains control of video parameters and the display resolution of the video session.

Secondary users can be either active users who have the ability to input mouse and keyboard data or passive users who may not input mouse and keyboard data.

If Automatic Sharing is enabled on the console switch (Global>Session), secondary users do not need the permission of the primary user to join the session.

If a primary user leaves the session, then the oldest secondary user with active user privileges will become the primary user. If there are no secondary users with active user privileges sharing the session when the primary user leaves the session, then the session will be closed.

For more information about configuring connection sharing, see "Configuring session parameters (on page 38)."

Expanding and refreshing the Video Session Viewer

You can adjust your view using the three icons at the top of the Video Session Viewer. The first icon, Single Cursor Mode, hides the local cursor. Press the **F10** key to return to dual cursor mode. The second icon, Refresh Video, enables you to refresh the video. The third icon, Align Local Cursor, enables you to align the mouse cursors.

Adjusting the local cursors

To adjust the local cursors, click **Align Local Cursor.** The local cursor aligns with the cursor on the remote server. If the cursors drift out of alignment, turn off the mouse acceleration in the server.

-or-

To adjust the local and remote cursors' tracking, perform an **Automatic Video Adjust** from the Tools menu option.

Refreshing the screen

To refresh the screen, click **Refresh Video.**

-or-

From the Video Session Viewer menu, select **View>Refresh.** The digitized video image is completely regenerated.

Expanding to full screen mode

From the Video Session Viewer menu, select **View>Full Screen.** The desktop window disappears, and only the accessed server desktop is visible. The screen resizes up to 1280 x 1024. If the client desktop has a higher resolution than the target desktop, a blank background surrounds the full screen image. A floating toolbar appears.

To exit full screen mode, click **Normal Window Mode** on the floating toolbar in the upper right corner.

Adjusting the Video Session Viewer

You can adjust both the resolution and the quality of the Video Session Viewer. You can also expand your session to fit the entire screen or refresh the view at any time.

Adjusting the Video Session Viewer size

The Video Session Viewer enables you to set up automatic scaling or manual scaling for the viewer window. When Auto Scale is selected, the desktop stays the same size and the Video Session Viewer scales to fit the desktop. When manual scale is selected, a list containing a selection of supported Video Session Viewer sizes appears.

To adjust the size of the Video Session Viewer size:

Select **View>Scaling>Auto Scale** to scale the Video Session Viewer automatically. The device image is scaled automatically.

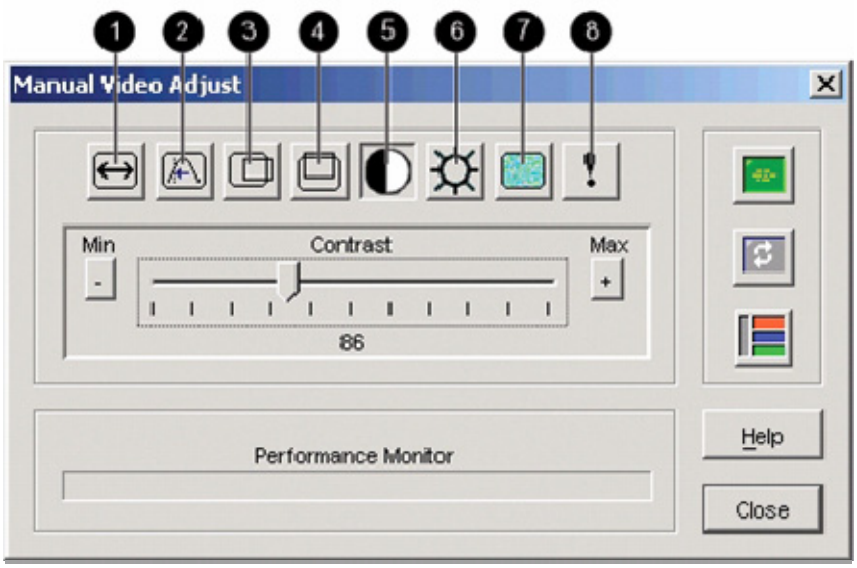
-or-

Select **View>Scaling><Dimensions from the list>** to scale the Video Session Viewer manually.

Adjusting the video quality

The Video Session Viewer offers both automatic and manual video adjustment capability. In most instances, the Automatic Video Adjustment optimizes the video for the best possible view.

The Performance Monitor provides feedback while adjusting the settings. Adjust the settings until the Performance Monitor displays no values.



Item	Description
1	Image Capture Width–Adjusts the screen image width
2	Pixel Sampling Fine Adjust–Adjusts the screen image pixel sharpness
3	Image Capture Horizontal Position–Adjusts the screen image position left or right

Item	Description
4	Image Capture Vertical Position–Adjusts the screen image vertical position up or down
5	Contrast–Increases or decreases screen image lightness or darkness
6	Brightness–Increases or decreases screen image intensity
7	Noise Threshold–Adjusts the number of pixels in a block for which a change must be detected for the video data to be sent to the client
8	Priority Threshold–Adjusts the level of changes within a video black to determine what would be sufficient to cause a video block to be marked as high priority

To adjust the video quality of the Video Session Viewer window:

1. Select **Tools>Manual Video Adjust.** The Manual Video Adjust dialog box appears.
2. Click the icon to be adjusted, and move the slider bar or click the **Min -** or **Max +** buttons. The adjustments are displayed immediately.
3. Click **Close** to exit.

Configuring session options

You can enable keyboard pass-thru, select a Menu Activation Keystroke, and enable Background Refresh Selection in the General Session Options dialog box.

Configuring keyboard pass-thru

Keyboard pass-thru eliminates the need for most macros by capturing the keystrokes before the local operating system and passing them through to the target server.

To configure keyboard pass-thru, select **Tools>Session Options>General,** and select **Pass-through all keystrokes in regular window mode.**

Selecting function buttons for the Video Session Toolbar

You can select up to 10 function buttons that appear on the toolbar display in the Toolbar Session Options dialog box. You can also select the Toolbar Hide Delay time.

Aligning the cursors

If the cursors no longer respond properly, you can align them to reestablish proper tracking. Alignment causes the local cursor to align with the cursor on the remote server.

△ **CAUTION:** If the server does not support the ability to disconnect and reconnect the cursors, then the cursor becomes disabled and the server must be rebooted.

To align the cursor for most operating systems, click **Align Local Cursor** in the menu bar.

Mouse tuning

To have the mouse pointers synchronized, you must change the mouse settings on the target server you will be controlling remotely.

NOTE: HP recommends that all Windows® systems attached to the console switch use the default Windows® mouse driver.

Windows operating systems

To synchronize the mouse pointers for Windows® operating systems (using the default drivers):

1. From the desktop, select **Start>Settings>Control Panel,** and double-click the Mouse icon.
2. Select **Motion.**
3. For Windows® 2000, set the Speed setting to **50%** (default) and the Acceleration setting to **None.**

   -or-

   For Windows Server™ 2003, set the Speed setting to **50%** (default) and clear the **Enhance Pointer Precision** option.

Linux operating systems

NOTE: The following Linux example uses Red Hat 3.0. For more information, refer to your Linux operating system's HELP or documentation.

To synchronize the mouse pointers for Linux operating systems (GNOME):

1. Click **main** menu.
2. From the main menu task list, select **Programs>Settings>Peripherals.**
3. From the Peripherals task list, select **Mouse.** The Mouse Configuration window appears. In this window, you can set the mouse to be either right-handed or left-handed and adjust the mouse motion by changing the threshold and adjusting the acceleration to the fourth position from the far left.

To synchronize the mouse pointers for Linux operating systems (KDE):

1. Go to the main menu, and select **K Menu>KDE Control Center>Input Devices>Mouse.**
2. Set the acceleration to **1X.**
3. Apply the settings, and click **OK.**

Viewing multiple servers using Scan mode

The Video Session Viewer enables you to simultaneously view multiple servers through the Thumbnail Viewer of Scan mode. This view contains a series of thumbnail frames, each containing a small, scaled, non-interactive version of the screen image of the server. The server name and status indicator appears below each thumbnail.

- A green LED indicates that a server is currently being scanned.
- A red X indicates that the last scan of the server was not successful. The scan might have failed because of a credential or path failure (for example, the server path on the console switch was not available). The tool tip for the LED indicates the reason for the failure.

The default thumbnail size is based on the number of servers in the scan list.

Scanning your servers

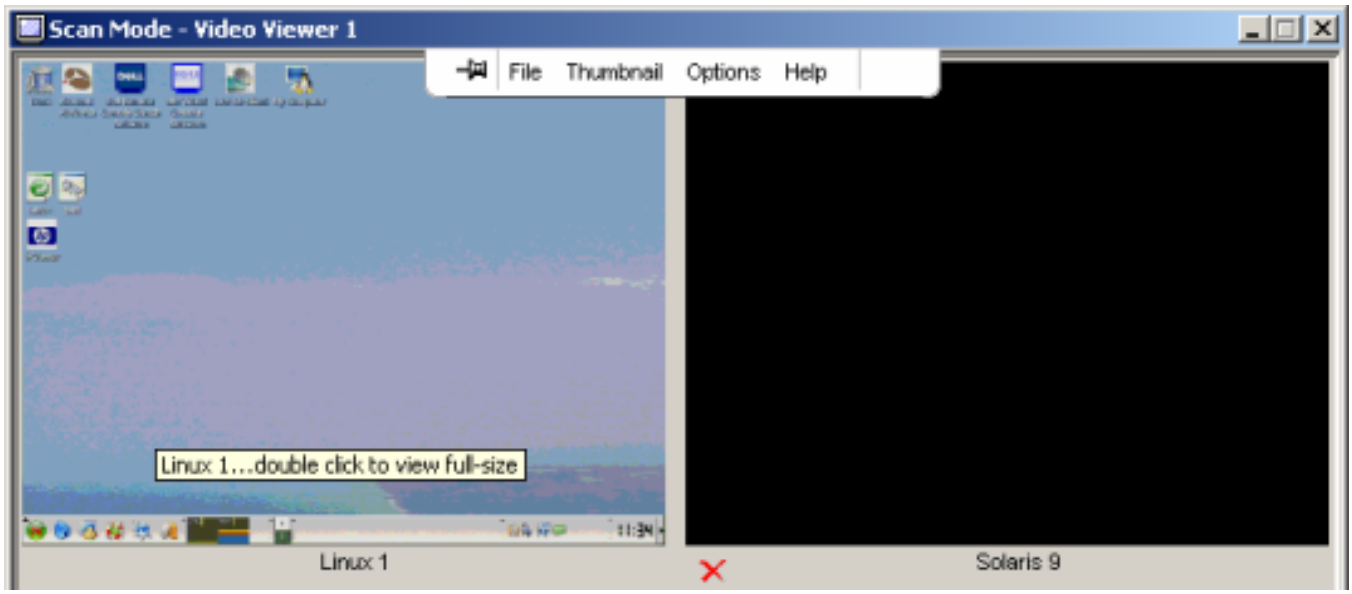
Through the Thumbnail Viewer, you can set up a scan sequence of up to 16 servers to monitor your servers. Scan mode moves from one thumbnail image to the next, logging in to a server and displaying an updated server image for a user-specified length of time (View Time Per Service), before logging out of that server and moving on to the next thumbnail image. You can also specify a scan delay between thumbnails (Time Between Servers). During the delay, you can see the last thumbnail image for all servers in the scan sequence, though you will not be logged in to any servers.

When you first launch the Thumbnail Viewer, each frame is filled with a white background until a server image appears. An indicator light at the bottom of each frame displays the status of the server. A green LED indicates that a server is currently being scanned. A red X LED indicates that the last scan of the server was not successful. The scan might have failed because of a credential or path failure (the server path on the console switch was not available). The tool tip for the LED indicates the reason for the failure.

Scan mode is a lower priority than an active connection. If you have an interactive session with a server, that server is omitted in the scan sequence and the scan proceeds to the next server. No login error messages display. After the interactive session is closed, the server is included in the scan sequence again. If another user has an active connection to a server, you see that thumbnail in your scan list.

Accessing Scan mode

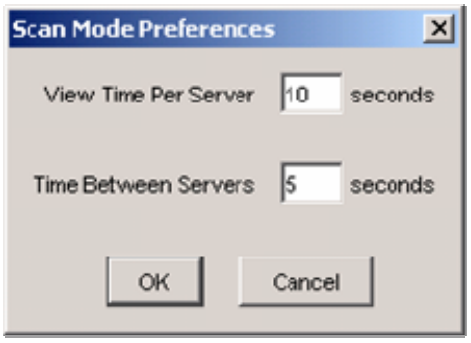
1. From main window, click **Server, Sites,** or **Folders.**
2. Select two or more servers by clicking the servers while pressing the **Shift** key or the **Control** key. The Scan Mode button appears.
3. Click **Scan Mode.** The Scan Mode window appears.



Setting scan preferences

1. From the thumbnail view, select **Options>Preferences.** The Scan Mode Preference dialog box appears.
2. Enter the time each thumbnail is active during the scan (10 to 60 seconds) in the View Time Per Server field.
3. Enter the length of time the scan stops between each server (5 to 60 seconds) in the Time Between Servers field.

4. Click **OK** to save changes or **Cancel** to exit without saving.



Navigating the thumbnail view

When you highlight an individual thumbnail frame and select the Thumbnail menu, you can launch an interactive session to that server, add that server to the scan sequence, or set the login credentials for that server.

The Options menu enables you to access scanning preferences, pause the scan, and set the thumbnail size for all servers.

Changing the thumbnail sizes

From the Thumbnail Viewer, select **Options>Thumbnail Size.** Select the desired thumbnail size from the cascade dropdown list.

Adding an individual server to the scan sequence

1. From the Scan Mode thumbnail view, right-click a server thumbnail.
2. Select **Thumbnail,** and then select **Enable.**

   That scan includes the server thumbnail in the scan sequence.

NOTE: If a user is accessing a server, the Enable Scan menu is disabled for that server thumbnail.

Launching a server video session from a thumbnail view

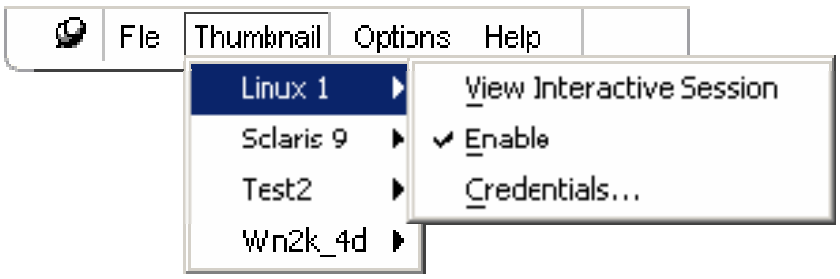
Select a server thumbnail. From the Thumbnail Viewer, select **Thumbnail>[server name]>View Interactive Session.**

-or-

Right-click a server thumbnail, and select **View Interactive Session.** The video for that server launches in an interactive Video Session Viewer window.

-or-

Double-click a server thumbnail.



Pausing or restarting a scan sequence

From the Thumbnail Viewer, select **Options>Pause Scan.** The scan sequence pauses at the current thumbnail, if the Thumbnail Viewer has a scan in progress, or restarts the scan if currently paused.

Setting server credentials

1. Select a server thumbnail.

   From the Thumbnail View, select **Thumbnail>[server name]>Credentials.**

   -or-

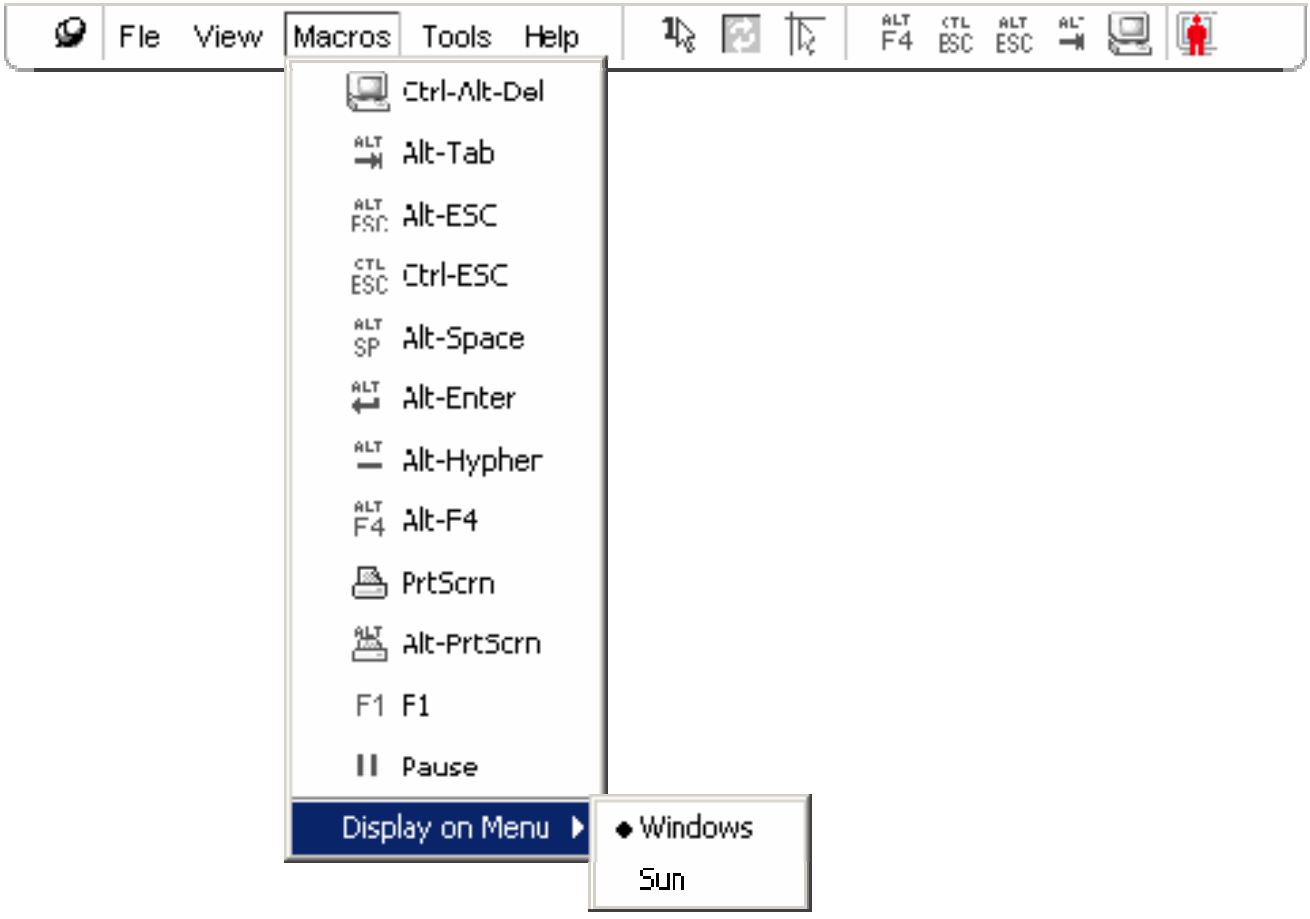
   Right-click a server thumbnail, and select **Credentials.** The login dialog box appears.
2. Enter a user name and password for the selected server. Press the **Enter** key.

Using macros for KVM console switches

The Video Session Viewer macro function enables you to:

- Send multiple keystrokes to a server, including keystrokes that you cannot generate without affecting your local system, such as Ctrl+Alt+Delete.
- Send a macro from a predefined macro group. Macro groups for Windows® and SUN are already defined.
- Change the macro group that displays by default. This action causes the macros in the specified group to be available in that menu.

Macro group settings are server-specific; that is, they can be set differently for each server.



Sending a macro

Click **Macros,** and then select the macros to send.

Using Virtual Media (HP IP Console Switches with Virtual Media only)

NOTE: The HP IP Console Viewer database is designed to store up to 25 managed console switches and up to 1,024 target servers (devices). If more units are added, performance may decrease.

Using an HP IP Console Switch with Virtual Media, you can map a removable mass storage device or a CD/DVD type device on the local computer as a virtual drive on a target server. You can also add and map an .iso or floppy image file on the local client as a virtual drive on the target server. You cannot map the local computer hard drive for Virtual Media use.

Virtual Media requirements

To properly use Virtual Media, the following requirements must be met:

- An HP IP Console Switch with Virtual Media (2 x 1 x 16 or 4 x 1 x 16) must be used.
- The target server must be connected to the console switch using a Virtual Media capable USB 2.0 interface adapter with Virtual Media or PS2 interface adapter with Virtual Media.
- The target server and its operating system must be intrinsically able to use the types of USB 2.0 compatible media that you virtually map. In other words, if the server BIOS or operating system does not support a portable USB memory device, you cannot map that on the local computer as a Virtual Media drive on the target server. Devices are presented as composite USB 2.0 devices, unless you map only one Virtual Media device through a PS2 interface adapter with Virtual Media.
- Only one Virtual Media session can be active to a server at one time.

Virtual Media resources

Virtual Media resources cannot be shared between a local OSD console and a remote console. For example, a remote user using the HP IP Console Viewer cannot use a Virtual Media resource attached to the local OSD console USB hub. Only Virtual Media resources directly connected to the client's computer, running the HP IP Console Viewer, can be mapped to a target server.

You can have one CD-type device and one mass-storage-type device mapped concurrently.

- A CD-type device includes a CD/DVD drive or an .iso image of a CD.
- A mass-storage-type device includes a floppy drive, floppy image file, USB memory device, or other removable media type, such as an external USB hard drive.

For HP Server Console Switches with Virtual Media, Virtual Media resources cannot be shared between local consoles. For example, a device connected to the USB hub of console port A cannot be accessed by console port B.

USB 2.0 composite device limitations

The default functionality for Virtual Media, when using a USB 2.0 interface adapter with Virtual Media capability, utilizes the composite high speed USB 2.0 capability of the protocol. Various target servers' BIOS, and particular operating systems and installation programs, do not support composite USB 2.0 devices. If your target server BIOS or operating system does not support such devices, you must perform one of the following actions:

- Purchase a PS2 interface adapter with Virtual Media to map to a single non-composite Virtual Media device.
- Disable the USB 2.0 function of the USB 2.0 interface adapter with Virtual Media from the console switch local OSD, allowing the interface adapter to operate in 1.1 mode. For more information on this option, see the HP IP Console Switch with Virtual Media User Guide.

Currently, AMD Opteron-based HP ProLiant servers and Red Hat Enterprise Linux 4 do not support composite USB 2.0 devices. However, the target server BIOS for Intel®-based HP ProLiant G4 and newer servers support composite USB 2.0 devices. If the server's BIOS supports USB 2.0 composite devices, but the operating system installation program does not, you will experience a failure at the time that the control of the keyboard and mouse is switched from the BIOS to the installation program.

HP recommends using the PS2 interface adapter with Virtual Media for AMD Opteron-based HP ProLiant servers and Red Hat Enterprise Linux 4.

Virtual Media sharing and preemption considerations

The KVM session and Virtual Media sessions are separate. Therefore, there are many options for sharing, reserving, or preempting sessions. The HP IP Console Viewer has the flexibility to accommodate the system needs.

For example, the console switch and Virtual Media sessions can be locked together. In this mode, when a console switch session is disconnected, the associated Virtual Media session is also disconnected. If the sessions are not locked together, the console switch session can be closed, but the Virtual Media session remains active.

When a server has an active Virtual Media session without an associated active console switch session, one of the two situations can occur:

- The original user (User A) can reconnect.

  -or-

- A different user (User B) can connect to that channel.

You can set an option in the Virtual Media window (Reserved) that only allows User A access to that channel with a console switch session.

If User B has access to that session (the Reserved option is not enabled), User B could control the media that is being used in the Virtual Media session. In some environments, this configuration might not be desirable.

By using the Reserved option in a cascaded environment, only User A could access the lower console switch, and the console switch channel between the upper console switch and lower console switch would be strictly reserved for User A.

Preemption levels offer additional flexibility of combinations.

Virtual Media window

The Virtual Media window is a program that manages the mapping and unmapping of Virtual Media. The window displays all the physical drives on the client's workstation that can be mapped as virtual drives (non-USB hard drives are not available for mapping). You can also add .iso and floppy image files and then map them using the Virtual Media window.

After a target server is mapped, the Virtual Media window Details View displays information about the amount of data transferred and the time elapsed since the target server was mapped.

You can specify that the Virtual Media session is reserved. When a session is reserved and the associated console switch session is closed, another user cannot launch a console switch session to that server. If a session is not reserved, another console switch session can be launched. Reserving the session can also

be used to ensure that a critical update is not interrupted by another user attempting to preempt the console switch session or by inactivity time-outs on the console switch session.

You can also reset the interface adapter from the Virtual Media window. This action resets every form of USB media on the server and should therefore be used with caution and only when the server is not responding.

Virtual Media session settings

Virtual Media session settings include the following:

- Locking

  The locking option specifies whether a Virtual Media session is locked to the console switch session on the target server. When locking is enabled (which is the default) and the console switch session is closed, the Virtual Media session is also closed. When locking is disabled and the console switch session is closed, the Virtual Media session remains active.

- Mapped drives access mode

  You can set the access mode for mapped drives to read-only. When the access mode is read-only, you cannot write data to the mapped drive on the client workstation. When the access mode is not set as read-only, you can read and write data to and from the mapped drive.

  If the mapped drive is read-only by design (for example, certain CD/DVD drives or .iso images), the configured read-wrote access mode is ignored.

  Setting the read-only mode can be helpful when a read-write drive, such as a mass storage device or a USB removable media, is mapped and you want to prevent the user from writing data to it.

- Encryption level

  You can configure up to three encryption levels for Virtual Media sessions. Any combination is valid. The following choices are available:

  - 128-bit SSL
  - 3DES
  - DES

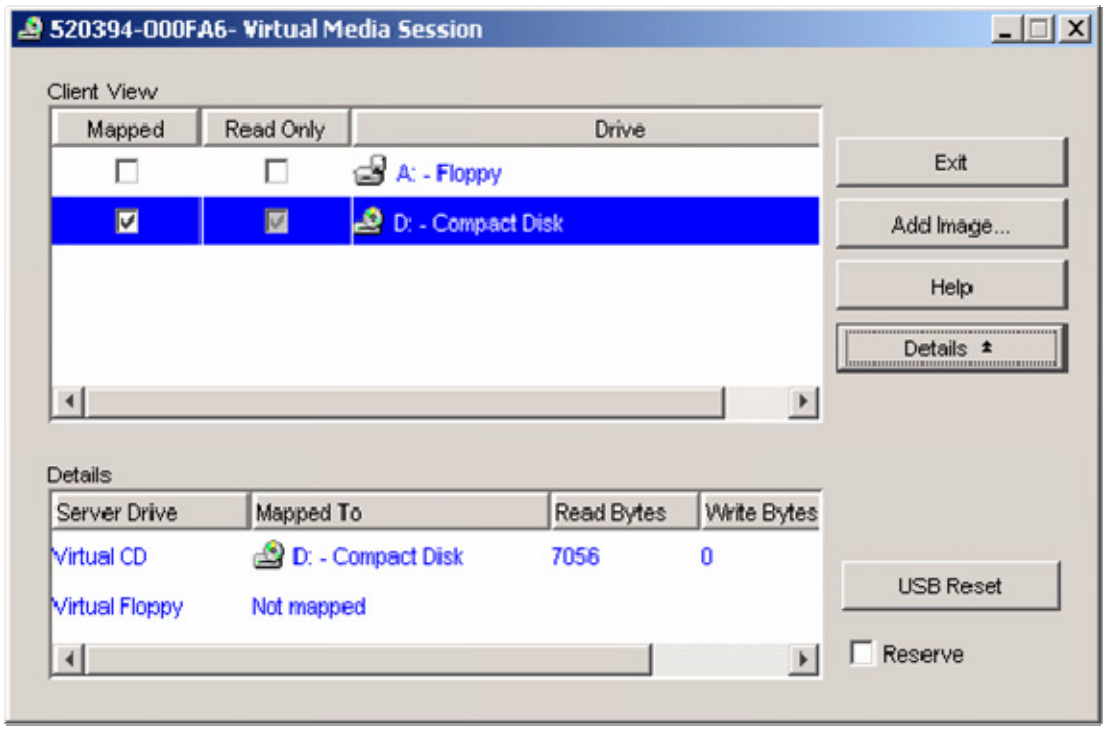
  The highest level selected (in this order) will be used. The default, if no encryption level is selected, is no encryption.

Opening a Virtual Media session

NOTE: The following procedures are valid only on console switches that are connected with USB 2.0 interface adapters with Virtual Media.

1. Launch a Video Session Viewer session to the server.
2. From the Video Session Viewer toolbar, select **Tools>Virtual Media.** The Virtual Media window appears.

3. If you want to make this a reserved session, on the Virtual Media window, click **Details,** and select the **Reserve** checkbox.



Mapping to Virtual Media drives

NOTE: In a Windows® operating system, the USB 2.0 interface adapter with Virtual Media displays two USB devices, one CD type and one mass storage type, when a Virtual Media mapping has not been established. These two devices and a USB root hub also display in the Safely Remove Hardware utility in the system tray of the desktop. If the devices or the rest hub are removed using the Safely Remove Hardware utility, the Virtual Media function does not work until the USB devices are rediscovered.

Open a Virtual Media session from the Video Viewer toolbar by selecting **Tools>Virtual Media.**

Mapping to a physical drive as a Virtual Media drive

1. In the Virtual Media window, click **Mapped** next to the drives you want to map.
2. If you want to limit the mapped drive to read-only access click **Read Only** next to the drive before to mapping the drive. If the Virtual Media session was previously configured so that all mapped drives must be read-only, this checkbox is enabled and cannot be changed.

You might want to enable the **Read Only** checkbox if the session settings enabled read and write access, but you wanted to limit a particular drive's access to read only.

Unmapping a Virtual Media drive

In the Video Session viewer window, using the appropriate procedure for the target server's operating system, perform an eject operation on the Virtual Media device.

Adding and mapping to an .iso or floppy image as Virtual Media drive

1. In the Virtual Media window, click **Add Image.**

   The common file chooser window appears with the directory containing disk image files (that is, those ending in *.iso* or *.img*) displayed.

2. Select an .iso or floppy image file, and click **Open.**

   The file's header is verified to be sure it is correct. If it is, the common file chooser window closes and the chosen image file opens in the Virtual Media Session window, where it can be mapped by clicking **Mapped.**

3. Repeat steps 1 and 2 for any additional .iso or floppy images you want to add. You can add any number of image files, up to the limits imposed by memory, but you can have only one virtual CD or virtual mass storage mapped concurrently.

   If you attempt to map too many drives (one CD and one mass storage device) or too many drives of a particular type (more than one CD or mass storage device), a message appears. If you still want to map a new drive, you must first unmap an existing mapped drive, and then map the new drive.

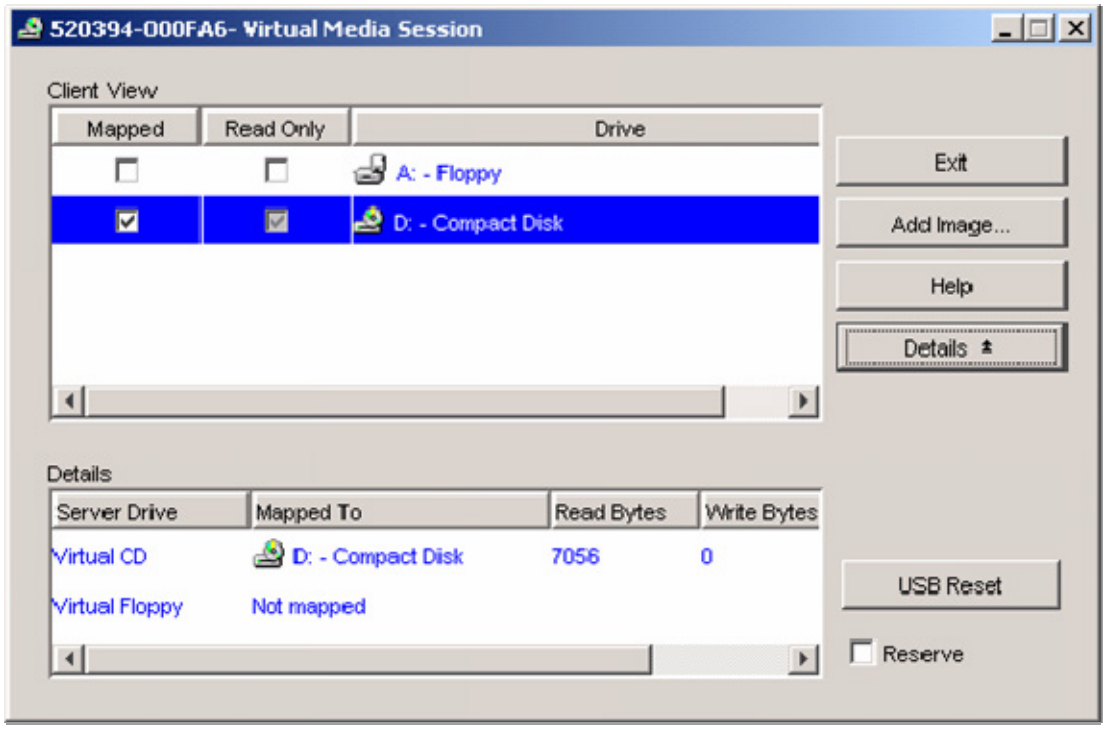
   After a physical drive or image is mapped, it can be used on the server.

Displaying Virtual Media drive details

1. Click **Details** in the Virtual Media window. The window expands to display the Details view. Each row indicates the following:

- Target Drive—A name used for the mapped drive, such as Virtual CD 1 or Virtual CD 2.
- Mapped to—Identical to drive information that displays in the Client View Drive column.
- Read Bytes and Write Bytes—Amount of data transferred since the mapping.
- Duration—Elapsed time since the drive was mapped.

2. Click **Details** again to close the Details view.



Resetting all USB devices on the server

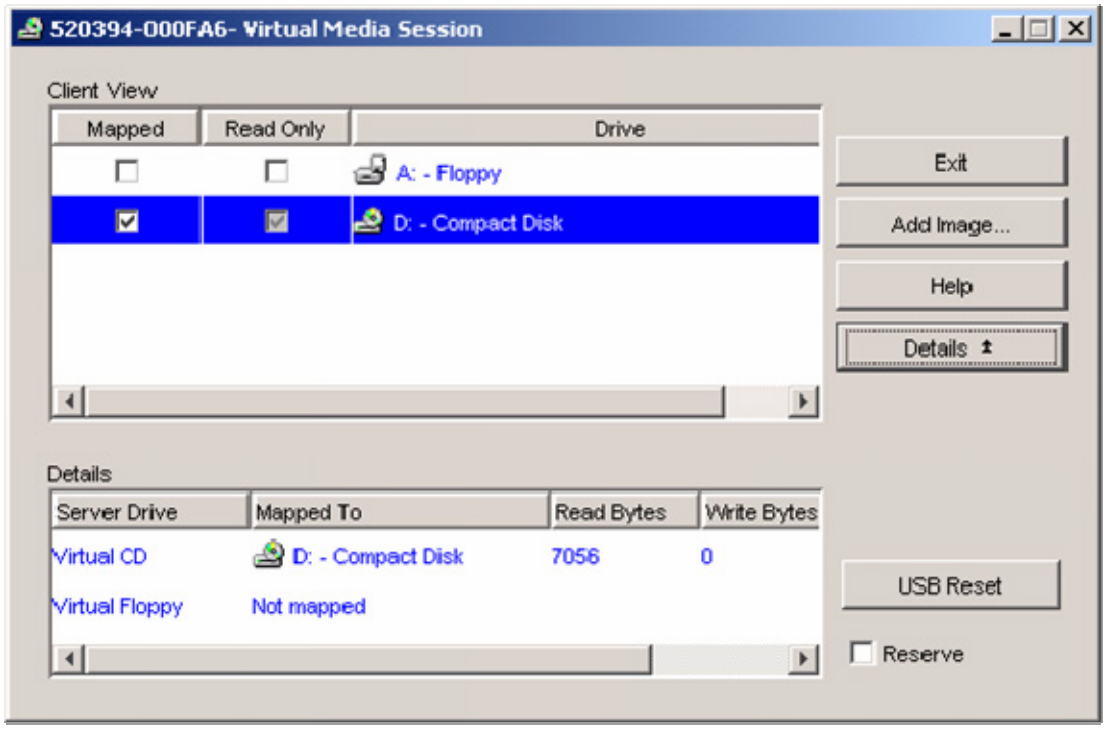
NOTE: The USB reset feature resets every USB device on the server, including the mouse and keyboard. It should only be used when the server is not responding.

1. Click **Details** in the Virtual Media window. The Details view appears.
2. Click **USB Reset.** A warning message appears, indicating the possible effects of the reset.
3. Click **Yes** to confirm the reset.

   -or-

   Click **No** to cancel the reset.

4. Click **Details** again to close the Details view.



Closing a Virtual Media session

1. Click **Exit.**

   -or-

   Click **X** to close the window.

   If you have any unmapped drives, a message appears, indicating that the drives will be unmapped.
2. Click **Yes** to confirm and close the window.

   -or-

   Click **No** to cancel the close.

If you attempt to disconnect an active console switch session that has an associated locked Virtual Media session, a confirmation message appears, indicating that any Virtual Media mappings will be lost. For more information concerning factors that can possible effect virtual media session closings, see "Virtual Media sharing and preemption considerations (on page 88)."

Managing serial console switches

In this section

Manage Console Switch window overview for serial console switches 94
Viewing and configuring the Settings tab for serial console switches 94
Viewing server parameters for serial console switches 131
Viewing version parameters for serial console switches..... 136
Viewing the Status tab for serial console switches 137
Using the Tools tab for serial console switches 138

Manage Console Switch window overview for serial console switches

After you have installed a new serial console switch, you can view and configure serial console switch parameters, view and control currently active video sessions, and execute a variety of control functions, such as rebooting and upgrading your serial console switch.

The Manage Console Switch window consists of three tabs:

- Settings tab for serial console switches ("Viewing and configuring the Settings tab for serial console switches" on page 94)
- Status tab for serial console switches ("Viewing the Status tab for serial console switches" on page 137)
- Tools tab for serial console switches ("Using the Tools tab for serial console switches" on page 138)

Some operations you initiate through the Manage Console Switch window can cause a dialog box to appear, indicating that a reboot is required for the change to take effect. In such cases, you can choose to reboot immediately or wait to reboot later.

For more information about the serial console switch and its operations, see the documentation included with the serial console switch.

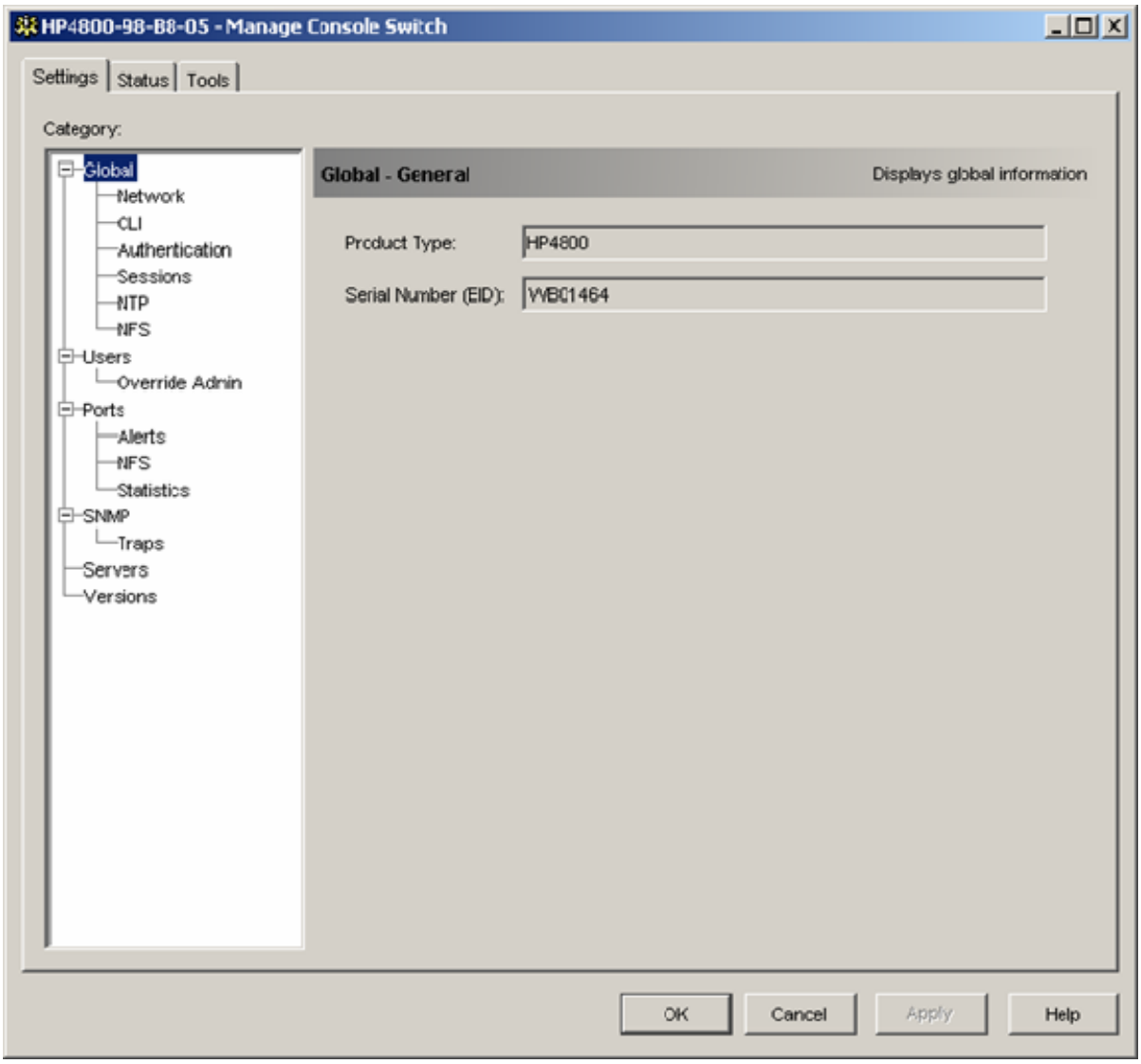
Viewing and configuring the Settings tab for serial console switches

The Settings tab enables you to display an expandable list of categories covering a wide range of parameters for the serial console switch. When a category is selected, the parameters associated with that category are read from the serial console switch, the database, or both. You can modify those parameters and send changes securely back to the serial console switch through the Manage Console Switch window.

Configuring global parameters for serial console switches

The Global category displays the product type and serial number (EID) for the serial console switch. This information cannot be modified.

The Serial Number (EID) field contains information for the serial console switch hardware and the EID attached to that serial console switch.

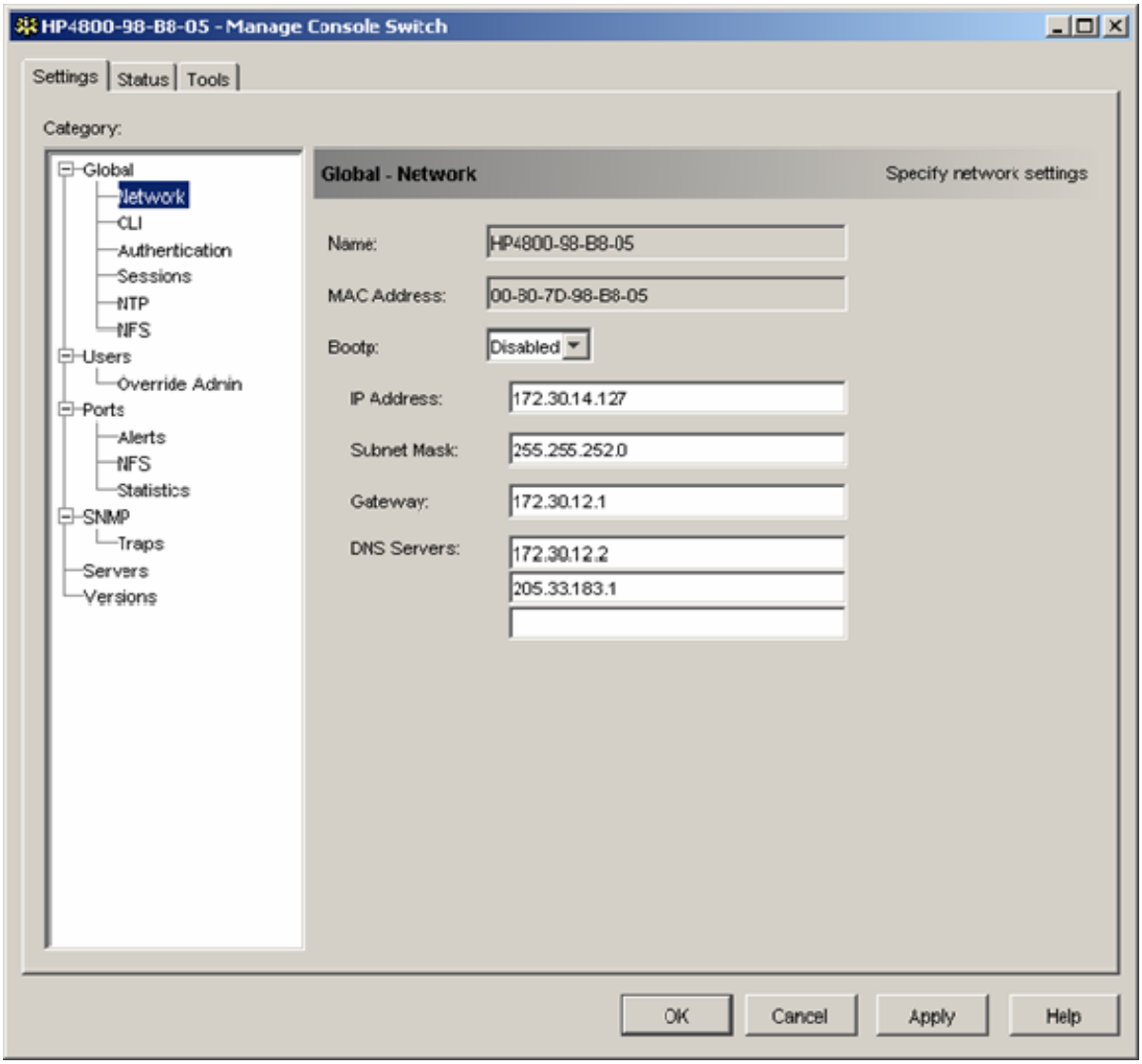


Configuring network parameters for serial console switches

The Network subcategory enables you to view the network settings of a serial console switch, including the Name (read-only), MAC Address (read-only), Bootp, IP Address, Subnet Mask, Gateway, and DNS Servers settings. You can change the serial console switch name in the SNMP category.

The DNS servers can be used to find domain controllers during LDAP authentication and authorization operations, but HP recommends using IP addresses.

The DNS Servers field appears only if LDAP Authentication is licensed on the serial console switch.



To change network parameters:

1. Select **Network.**
2. Select **Enabled** if a BOOTP server is to be used to obtain the network configuration. The remaining fields on this panel are disabled.

   -or-

   Select **Disabled** if a static network configuration is to used to obtain the network configuration.

   a. In the IP Address field, enter the address of the serial console switch in IP dot notation. The value cannot be a loopback address or all zeros.

   b. In the Subnet Mask field, enter the subnet mask of the serial console switch in IP address dot notation. The value cannot be a loopback address or all zeros.

   c. In the Gateway field, enter the gateway address of the serial console switch in IP address dot notation. The value cannot be a loopback address. If there is no gateway address, enter 0.0.0.0.

   d. In the DNS Servers fields, enter the address in IP dot notation of up to three DNS server.
3. Click **Apply** to save any changes without exiting.

-or-

Click **OK** to save any changes and exit.

-or-

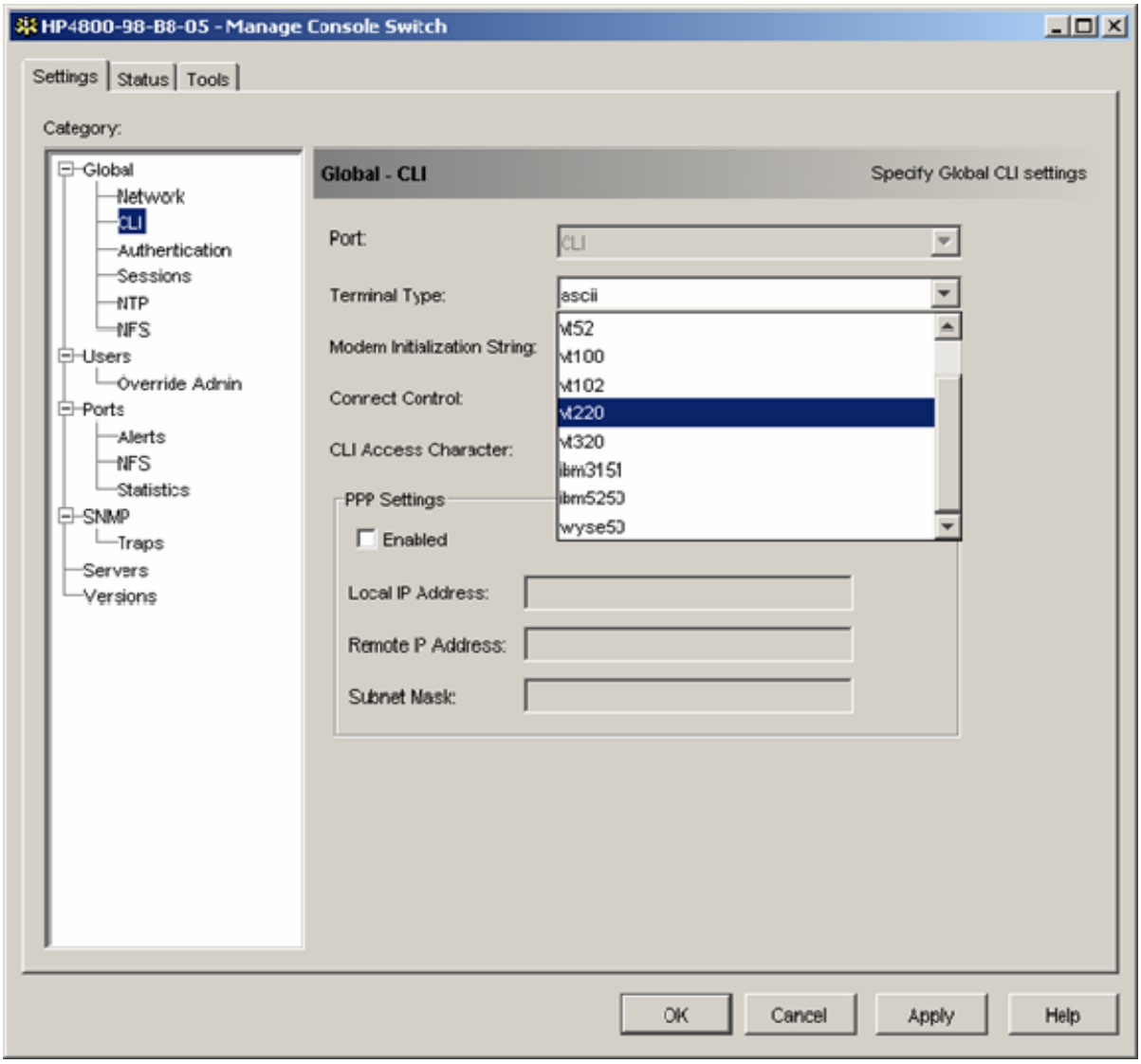
Click **Cancel** to exit without saving any changes.

Configuring CLI parameters for serial console switches

The CLI subcategory specifies the CLI port terminal type and whether users can connect to other ports from the CLI port. This subcategory also specifies the following:

- Modem initialization—If this field contains a non-zero value, the serial console switch assumes a modem is attached to the serial CLI port. At bootup and each time the serial console switch detects modem power up, this string is sent to the modem to initialize it for call reception. Modem power up is detected by a transition of serial console switch from low to high.
- Connect control—When this feature is enabled, you can connect to other serial ports from the CLI port. When disabled, connecting to another serial port from the CLI port is not allowed.
- CLI access character—During a telnet session to a server, when you enter this character while simultaneously pressing the Control key, the CLI mode is accessed.

- PPP settings—When PPP is enabled, you specify the local IP address that will be used to communicate with this serial console switch over a PPP connection on the serial CLI port. You also specify the remote IP address for the client that connects to the serial console switch over the PPP connection. A subnet mask can also be included.



To change CLI settings:

1. Select **CLI.**
2. Select the terminal emulation type for the CLI port from the dropdown list in the Terminal Type field.
3. Enter a zero- to 64-character string containing the command to set the modem to autoanswer mode in the Modem Initialization field. If no modem is connected, leave this field blank.
4. Select **Enabled** or **Disabled** from the dropdown list to indicate whether a user can connect to other serial ports from the CLI port in the Connect Control field.
5. Enter a caret (^) and the character that is used to access CLI mode during a server session in the CLI Access Character field. The character entered after the caret can be a letter or one of the following: left bracket ([), right bracket (]), caret (^), underscore (_), or backslash (\). The caret character represents the <Ctrl> key, and in combination with the next character can be used to access the console switch CLI mode during a server session. ^D or <Ctrl>D is the default.
6. Select or clear **Enabled** in the PPP Settings area. If you enable the PPP Settings, set the IP address for PPP.

7. Enter the address to be used to communicate with this serial console switch, in IP dot notation in the Local IP Address field. The value cannot be a loopback address or all zeros.
8. Enter the address of the client that will connect to this serial console switch in IP dot notation in the Remote IP Address field. The value cannot be a loopback address or all zeros.
9. Enter the subnet mask for the PPP connection in IP dot notation in the Subnet Mask field. The value cannot be a loopback address or all zeros.
10. Click **Apply** to save any changes without exiting.

    -or-

    Click **OK** to save any changes and exit.

    -or-

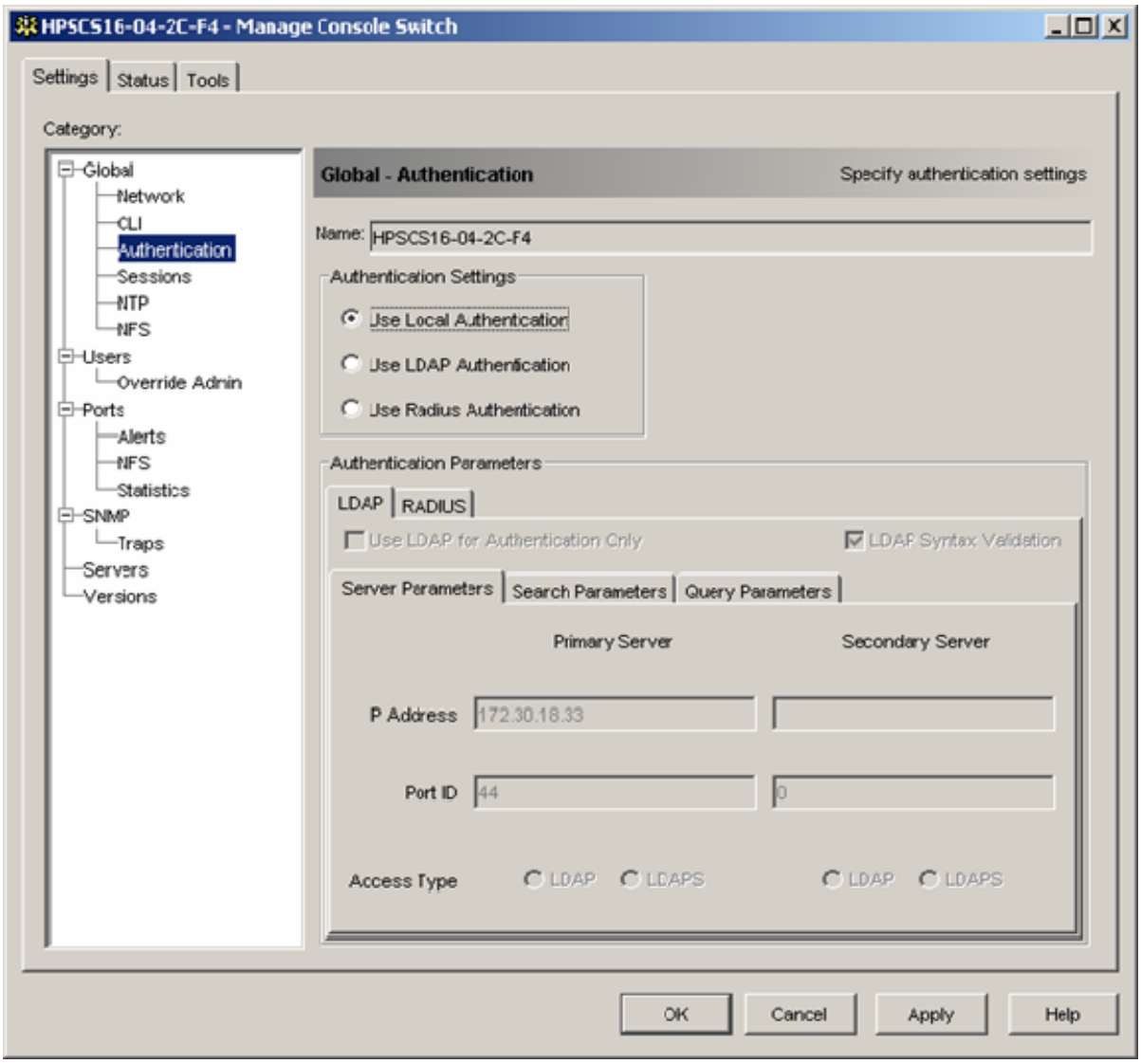
    Click **Cancel** to exit without saving any changes.

Configuring authentication parameters for serial console switches

The Authentication subcategory enables you to specify the type of authentication method you want to use. Select one of the following:

- If RADIUS authentication is selected, the RADIUS server information is also specified in this panel.
- If local authentication is selected, up to 64 users can be added in the Users category.

- If LDAP is selected, the Authentication Parameters tab becomes active. For more information, see "Using directory services integration (on page 182)."



To change authentication settings:

1. Select **Authentication.**
2. Select **Use Local Authentication.**

   -or-

   Select **Use LDAP Authentication.**

   -or-

   Select **Use RADIUS Authentication.**
3. If use local authentication is enabled, see "Configuring user accounts for serial console switches (on page 108)."

   -or-

   If use LDAP authentication is enabled, see "Using directory services integration (on page 182)."

   -or-

If RADIUS is enabled, the following information must be set for the primary server. The RADIUS Servers area is valid only if RADIUS is the selected authentication method. Information for the secondary server is optional.

a. Enter the addresses of the RADIUS servers in IP dot notation in the IP Address fields. These values cannot be loopback addresses or all zeros.

b. Enter the eight- to 24-character strings that will be used to communicate with the RADIUS servers in the Shared Secret field. These values must also be configured on the RADIUS servers. See the RADIUS system administrator or documentation for server-specific configuration information.

c. Enter the attributes that identify the access rights stored on the RADIUS servers for this serial console switch in the Access Rights Id. fields. These values must also be configured on the RADIUS servers. See the RADIUS system administrator or documentation for server-specific configuration information.

d. Enter the UDP port numbers that will be used to communicate with the RADIUS servers, in the range 1-65535 in the UDP Port fields.

e. Enter the number of seconds to wait for a reply from the RADIUS servers, in the range 1 to 60 in the Time-Out fields.

f. Enter the number of attempts that will be made to authenticate a user after a time-out on the RADIUS servers, in the range 1 to 10 in the Retry Count fields.

4. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

   -or-

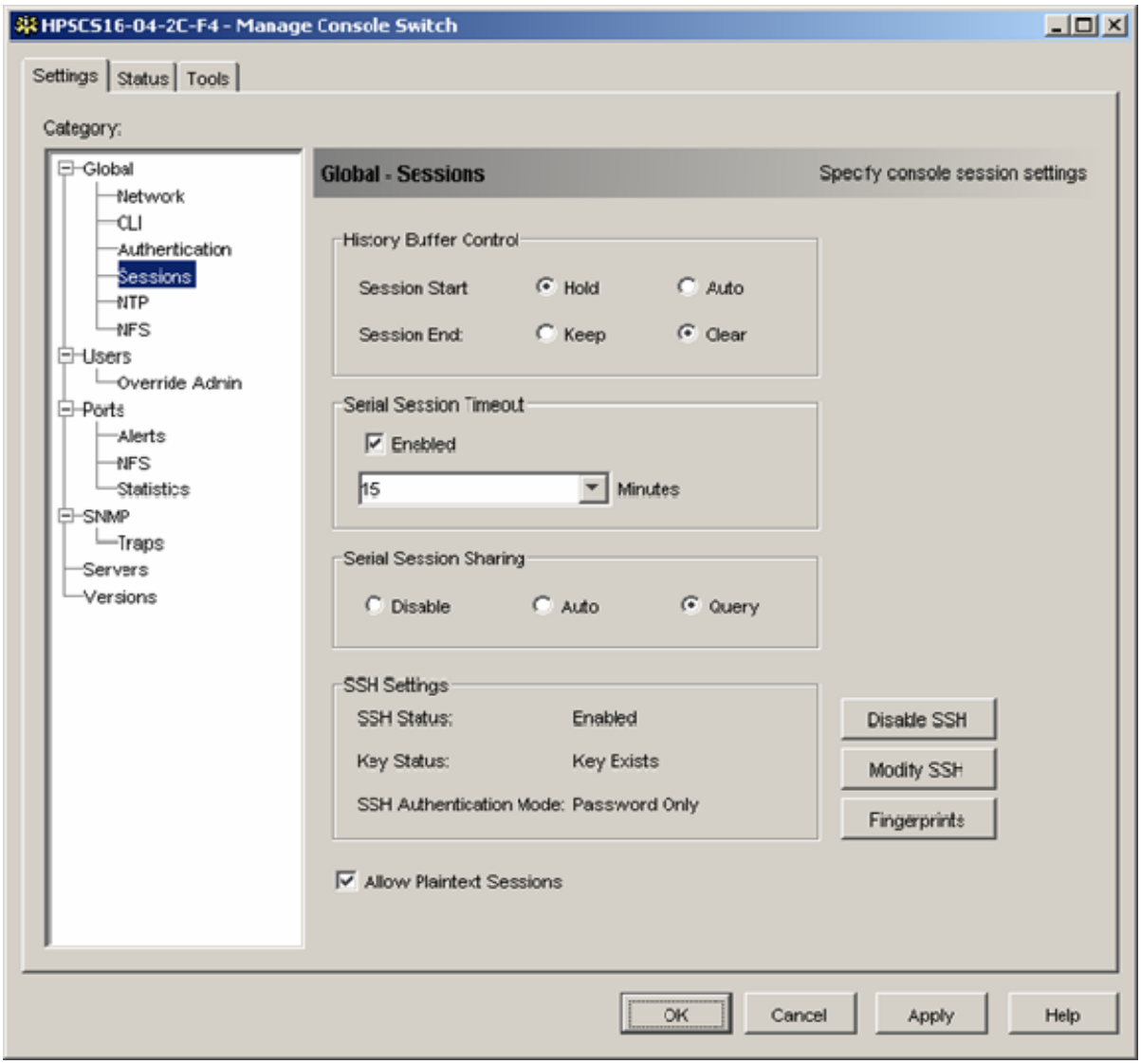
   Click **Cancel** to exit without saving any changes.

Configuring session parameters for serial console switches

The Sessions subcategory specifies:

- How history buffer data is handled at the start and end of the telnet session. You can have the data sent to the virtual terminal window automatically when a telnet session is established (Auto) or have it held until it is explicitly requested (Hold). You can also retain the history buffer content when the telnet session ends (Keep) or discard it (Clear).
- Whether the serial console switch automatically closes an inactive telnet session. When enabled, the telnet session is closed when the serial console switch does not receive any data within a specified number of minutes.
- Whether the serial console switch allows plaintext sessions.
- SSH settings, including the ability to enable and disable SSH, specify or modify an SSH authentication mode, create an SSH key, and display the current SSH fingerprints.

Either plaintext sessions or SSH (or both) must be enabled to launch the Serial Session Viewer. Failure to have either or both enabled will result in an invalid configuration. Plaintext sessions are enabled by default.



Specifying a history buffer control

1. Select **Sessions.**
2. In the History Buffer Control area, select **Auto** or **Hold** for the Session Start action. Select **Keep** or **Clear** for the Session End action.
3. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

   -or-

   Click **Cancel** to exit without saving any changes.

Specifying a session time-out setting

1. Select **Sessions.**

2. Select or clear the **Enabled** checkbox in the Serial Session Timeout area. If time out is disabled, a session will not time-out.
3. If session time–out is enabled, specify the time-out value. You can choose a value from the Minutes dropdown list or you can enter a value in the range 1 to 90 minutes.
4. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

   -or-

   Click **Cancel** to exit without saving any changes.

Enabling or disabling plaintext sessions

NOTE: Either plaintext sessions or SSH (or both) must be enabled.

1. Select **Sessions.**
2. Select or clear the **Allow Plaintext Sessions** option.
3. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

   -or-

   Click **Cancel** to exit without saving any changes.

Viewing and configuring SSH parameters for serial console switches

The SSH Settings area of the Session subcategory lists the current SSH configuration and status information, as follows:

- SSH Status can be Enabled, Disabled, In Progress, or Failed.
- Host Key Status can be either Key Exists or No Key.
- SSH Authentication Mode indicates what will be used to authenticate users: a password, a key, a password or a key (in either order), or a password and a key (in either order). The mode is configured when SSH is enabled or modified.

The user SSH key is created and modified in the Users category.

To view and configure parameters:

NOTE: Either plaintext sessions or SSH (or both) must be enabled.

1. Select the Sessions subcategory.

   To enable SSH:

   a. Click **Enable SSH.** The Enable SSH dialog box appears.

   b. Select the SSH Authentication Mode from the pull-down menu.

c. If an SSH key does not exist, the **Create new key** checkbox is automatically selected and a new key is created. After a new key is created, you cannot disable it.

   If an SSH key exists and you want to create a new key, select the **Create new key** checkbox.

   -or-

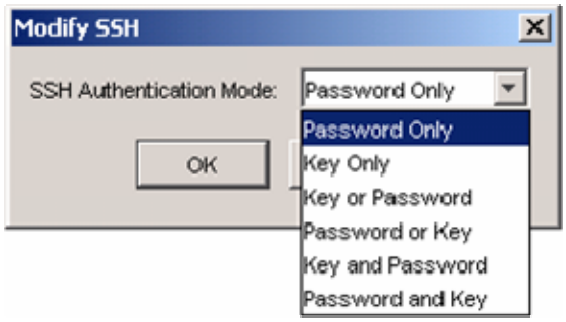
   To use the existing key, clear the **Create new key** checkbox.

2. Click **OK** to close the dialog box. SSH is now enabled.

Changing the SSH authentication mode

1. Click **Modify SSH.** The Modify SSH dialog box appears.

2. Select the SSH authentication mode from the dropdown list.



3. Click **OK** to close the dialog box.

Disabling SSH

1. Click **Disable SSH.** The Confirm Disable SSH dialog box appears.

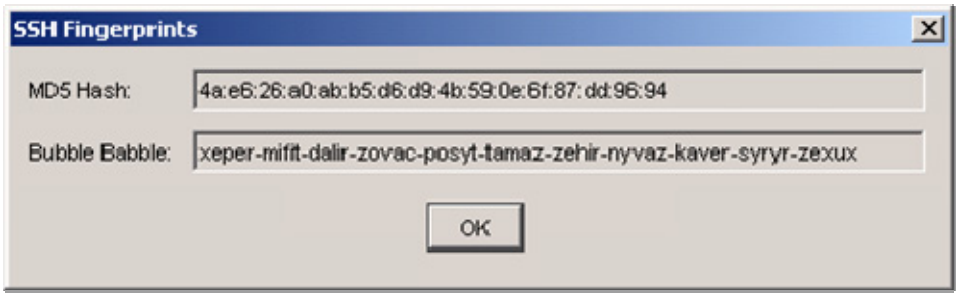
2. To delete the SSH key, select the **Delete Key** checkbox.
3. Click **Yes.** SSH is now disabled.

   or

   Click **No.** SSH is still enabled.

Viewing key information

1. Click **Fingerprints.** The SSH Fingerprints dialog box appears and displays the MD5 hash and bubble babble.



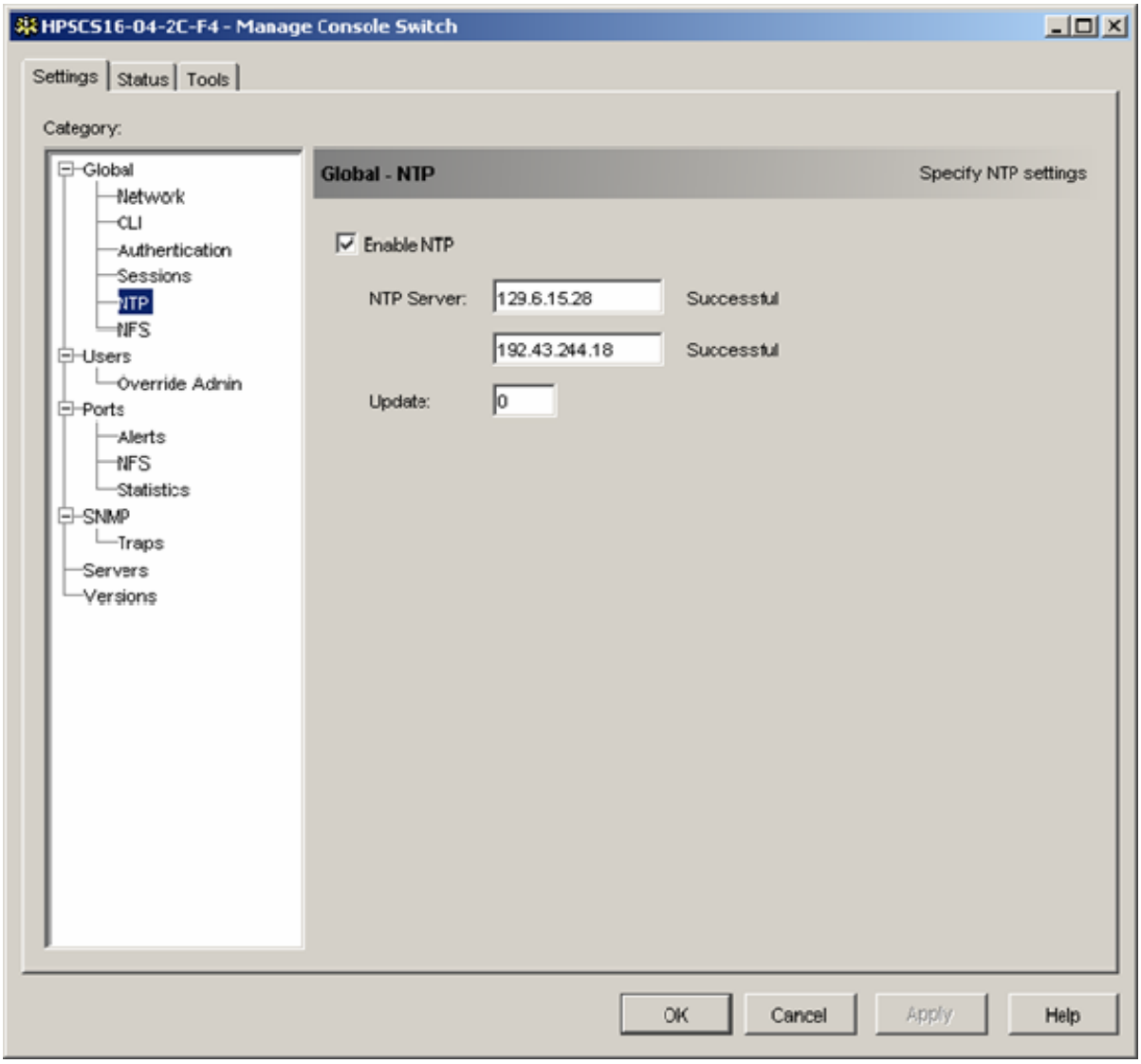
2. Click **OK** to close the dialog box.

Configuring NTP parameters for serial console switches

The NTP subcategory enables you to synchronize the time on your serial console switch to the time on a network server.

When NTP is enabled, the real-time clock on the serial console switch updates immediately after NTP is enabled, each time the serial console switch reboots and optionally, at specified intervals.

You can specify one or two NTP servers to provide the time. An NTP server can be external or an internal server that you supply. The primary server is queried for the time first. If it does not respond with a valid time, the secondary server is queried for the time. (The second server is also queried for status even if a valid time was obtained from the primary server.)



To configure NTP parameters:

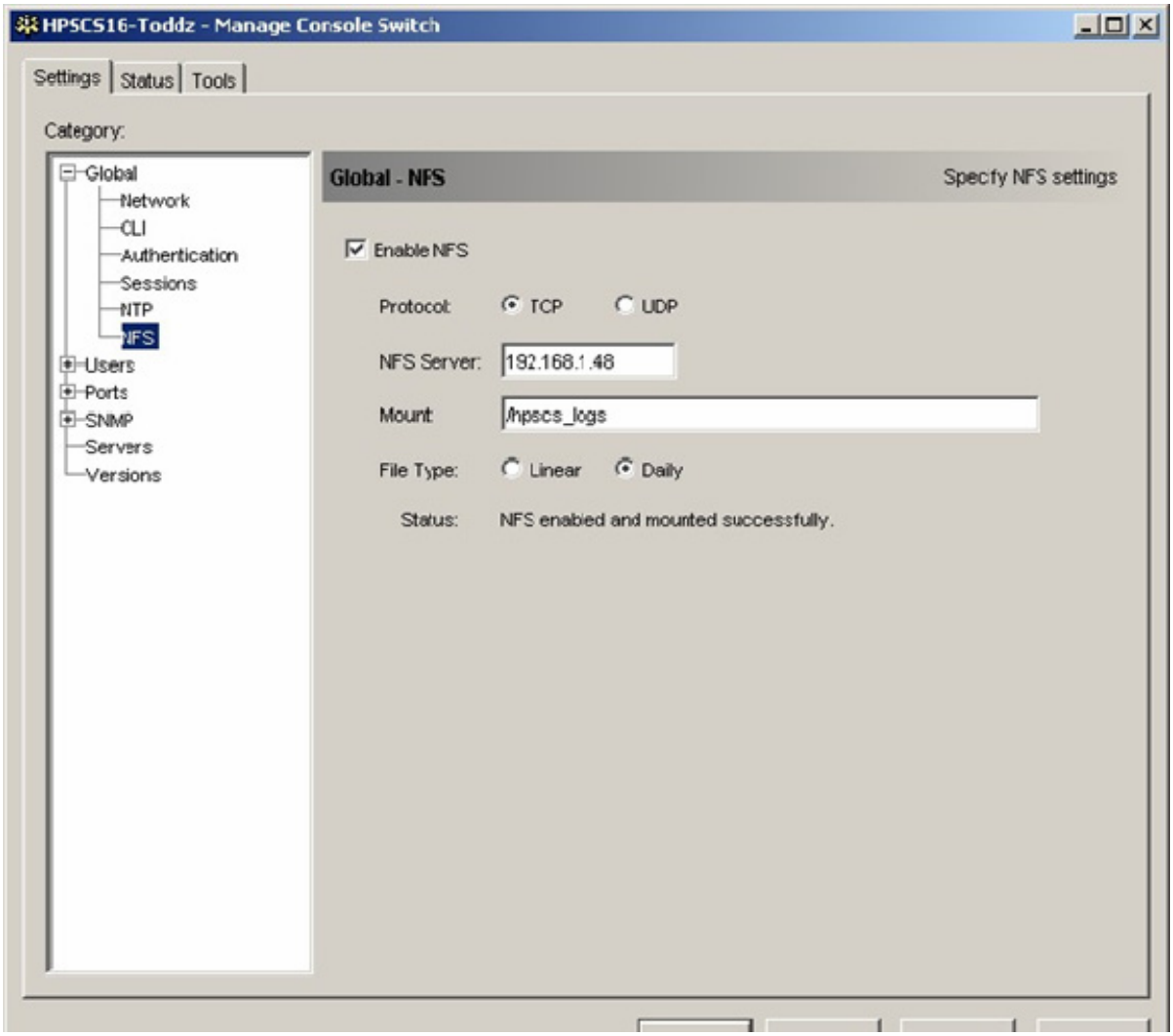
1. Select **NTP.**
2. Select the **Enable NTP** checkbox.
3. Enter a primary NTP server address.
4. (Optional) Enter a secondary NTP server address.
5. Enter an update interval for sending time requests, in hours, or enter 0. If you select 0, the time updates when the system is rebooted, or power cycles.

Configuring NFS parameters for serial console switches

The NFS subcategory enables you to configure an NFS share to write log files for serial ports to a network server.

When the NFS feature is enabled, the port history data is written to a file on an NFS server, in addition to the local history buffer on the serial console switch. Each port has its own files on the NFS server where data is written.

When the NFS feature is not enabled, all of the parameters in the NFS subcategory are disabled.



To configure NFS parameters:

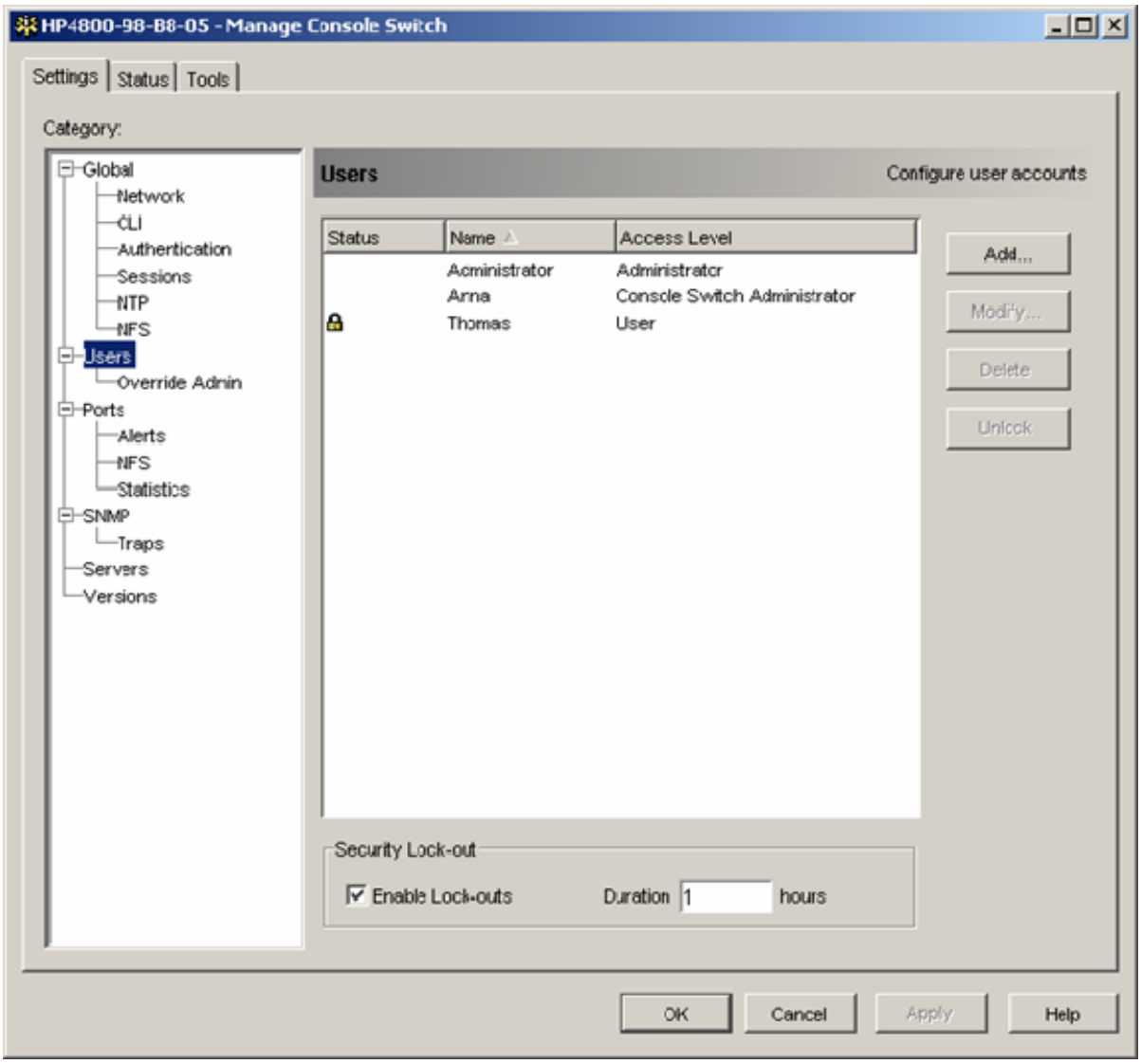
1. Select **NFS.**
2. Select the **Enable NFS** checkbox.
3. Select **TCP** or **UDP** for a network protocol that is used for communications between the serial console switch and the NFS server.
4. Enter an NFS server IP address.
5. Enter a mount point on the NFS server.
6. Select **Linear** to have a new file. A file is opened for writing at the end (appended).

   -or-

   Select **Daily** to have a new file. A new file is created every midnight.

Configuring user accounts for serial console switches

The Users category lists user names and their access levels. You can add, modify, or delete a user account from this dialog box. Up to 64 user accounts can be created. The Security Lock-out feature is also controlled from this panel.



A user can be assigned one of three access levels: Console Switch Administrator, Administrator, or User. The user access level enables you to assign individual server access rights to a user. The table following indicates the types of console switch operations that may be performed in each access level.

Operation	**Console Switch Administrator**	**Administrator**	**User**
Preemption	All	Equal and lesser	No
Configure Global and Network settings (security mode, timeout, and SNMP)	Yes	No	No
Reboot	Yes	No	No
Upgrade	Yes	No	No
Administer user accounts	Yes	Yes	No

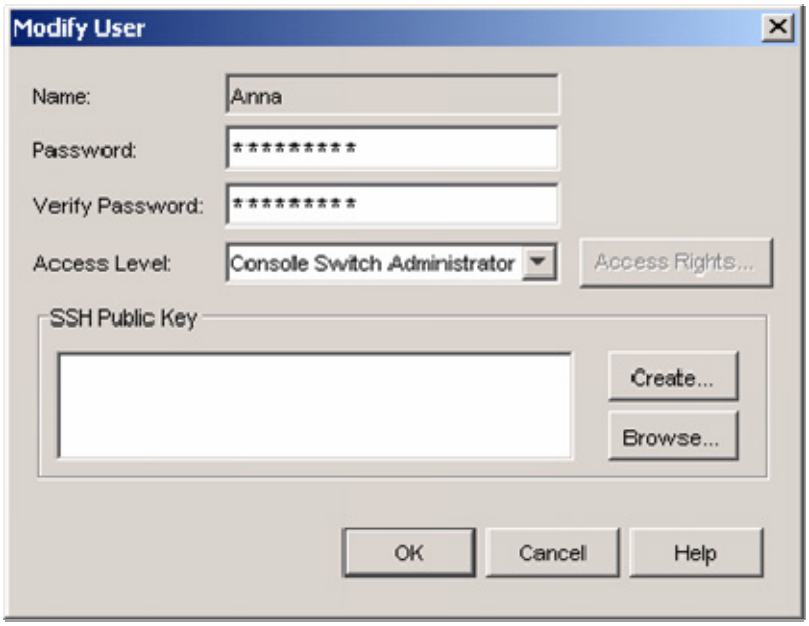
Operation	Console Switch Administrator	Administrator	User
Configure port settings	Yes	N o	No
Monitor server status	Yes	Yes	No
Target server access	Yes	Yes	Assigned by admin
Server resync	Yes	Yes	Yes

Adding or modifying a user for serial console switches

1. Select **Users.**
2. To add a new user, click **Add.** The Add User dialog box appears.

   -or-

   To modify a user, select the name, and then click **Modify.** The Modify User dialog box appears.



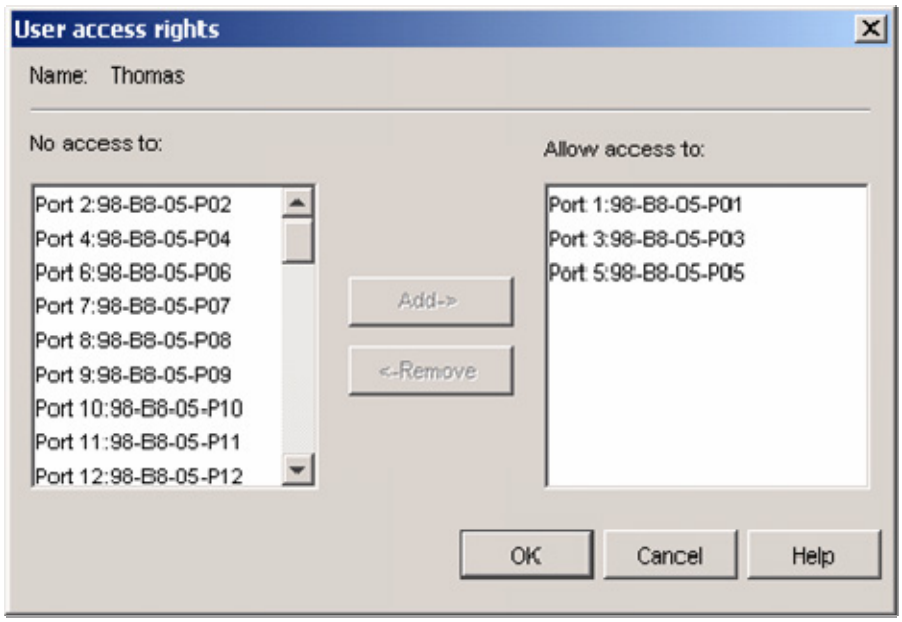
3. When adding a user, enter the three- to 16-character user name in the Name field. Spaces are not allowed.
4. Enter the user name and password (user assigned), and verify the password by entering it again in the Verify Password field. Passwords must be five to 16 characters in length, contain both alphabetic and numeric characters, and contain both uppercase and lowercase alphabetic characters. User names must be three to 16 characters. If you intend on using the optional LDAP functionality in the future, be sure to follow the LDAP version 3 syntax user account rules when creating a user name.

NOTE: The Access Rights button is enabled only when Access Level=User is selected.

NOTE: The password fields are disabled (grayed-out), when using LDAP Authentication Only mode.

5. Select the appropriate access level from the dropdown list. If you select **User,** the Access Rights button appears.

a. To select individual server access for the user, click **Access Rights.** The User access rights dialog box appears.



b. To add access to a server, select a server in the No access to: column. Click **Add.**

c. To remove access to a server, select a server in the Allow access to: column. Click **Remove.**

d. Repeat steps b and c until the Allow access to: column represents the appropriate server access for this user, and then click **OK.**

6. To configure the public SSH key of a user:

a. Enter a one- to 1,024-character key in the SSH Public Key field.

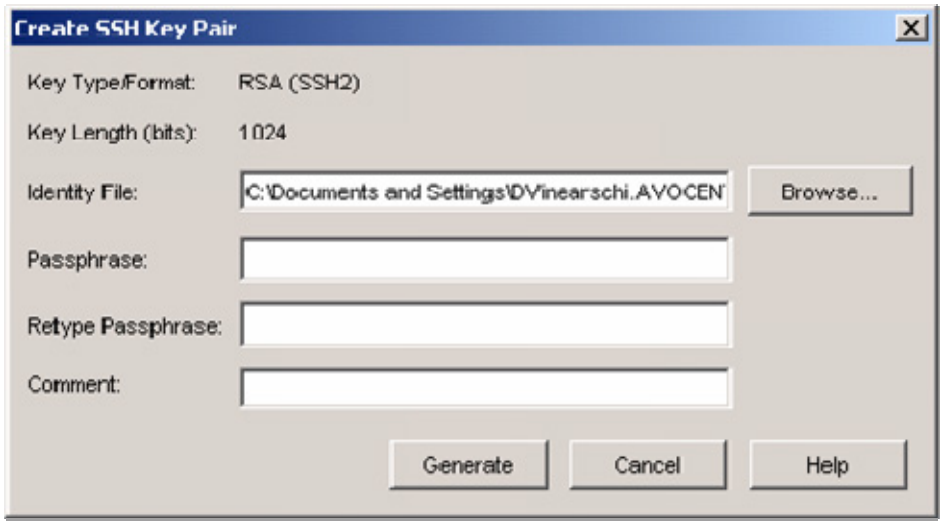
-or-

Click **Browse** to navigate to the path or file name containing an SSH key. The public key contained in the selected file appears in the SSH Public Key field.

-or-

Click **Create.** The Create SSH Key Pair dialog box appears. The Identity File field contains the private key file name and path.

b. Click **Browse** to specify a path and file name for the public/private key files to change the Identity File field content. By default, these key files are stored under "<user home directory>\IPViewer\userkeys."

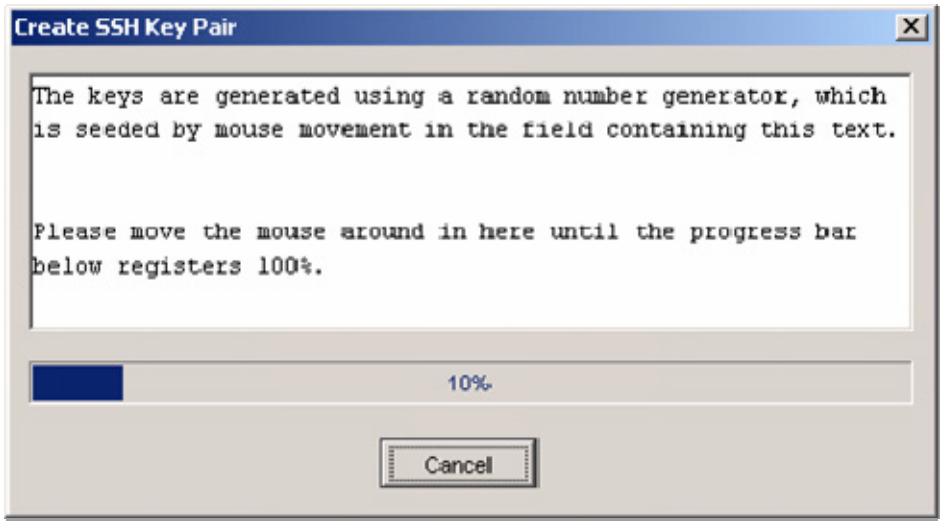


c. Enter a secret pass phrase for accessing the private key file in the Passphrase field. Asterisks display instead of the actual data you enter. If you leave this field blank, your key is not encrypted.

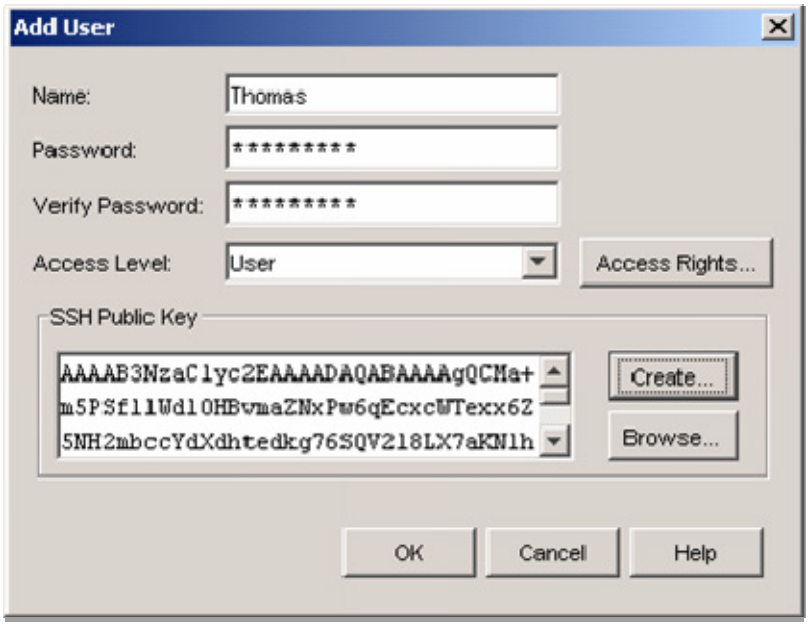
d. Repeat the pass phrase in the Retype Passphrase field.

e. (Optional) Enter information in the Comments field.

f. Click **Generate.** The text area of the dialog box displays help information and senses movement as the mouse is dragged across it. Move the mouse to assist the random number generator. It passes a seed that is based on the mouse's location. A progress bar indicates the completion percentage.


Create SSH Key Pair
The keys are generated using a random number generator, which is seeded by mouse movement in the field containing this text.
Please move the mouse around in here until the progress bar below registers 100%.
10%
Cancel

When the completion percentage reaches 100, the dialog box closes, a confirmation dialog box displays and the generated key displays in the SSH Public Key field of the Add User or Modify User dialog box.



7. Click **OK** to save the settings and return to the Users category.
8. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

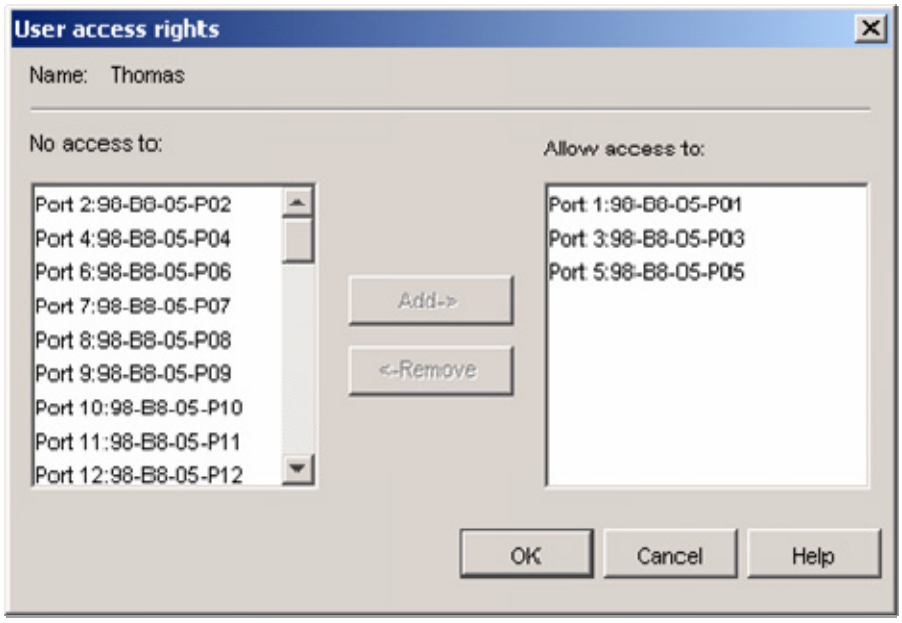
   -or-

   Click **Cancel** to exit without saving any changes.

NOTE: Each user must have a password to be able to access the Manage Console Switch window. This requirement is independent of any configured SSH authentication mode that may use the password.

Setting user access rights for serial console switches

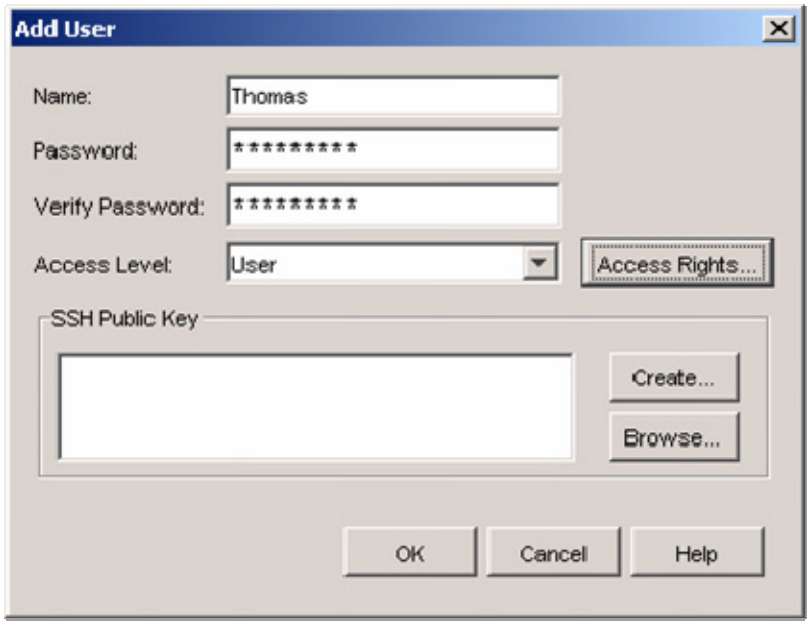
1. Click **Access Rights** to select individual servers for that user. The User access rights dialog box appears.



2. Select a server in the No access to: and click **Add.**
3. Select a server in the Allow access to: and click **Remove.**
4. Repeat steps 2 and 3 until the right column represents the appropriate server access for the assigned user, and click **OK.**

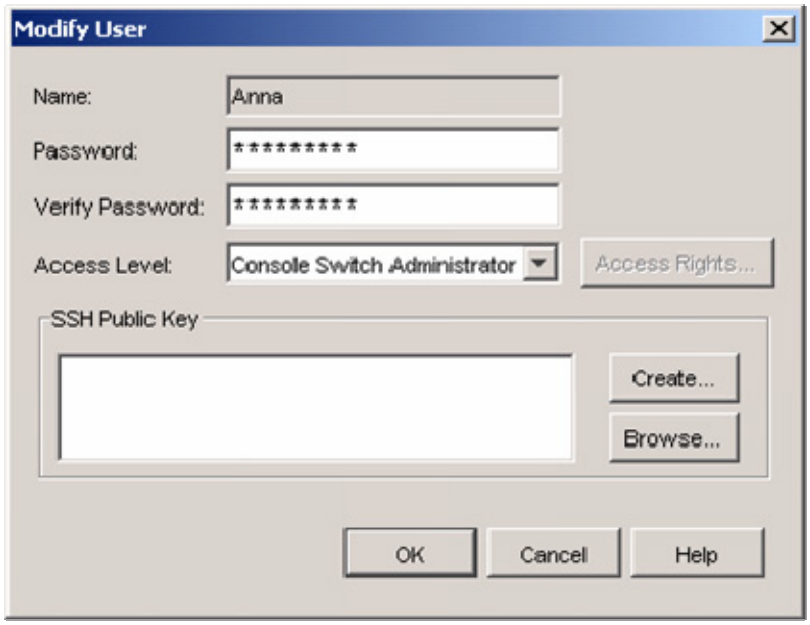
Configuring the public SSH key for serial console switches

1. Select **Users.**
2. To add a new user, click **Add.** The Add User dialog box appears.



-or-

To modify a user, select the name, and then click **Modify.** The Modify User dialog box appears.



3. To configure the SSH Public Key of a user:
   a. Enter a one- to 1,024-character key in the SSH Public Key field.

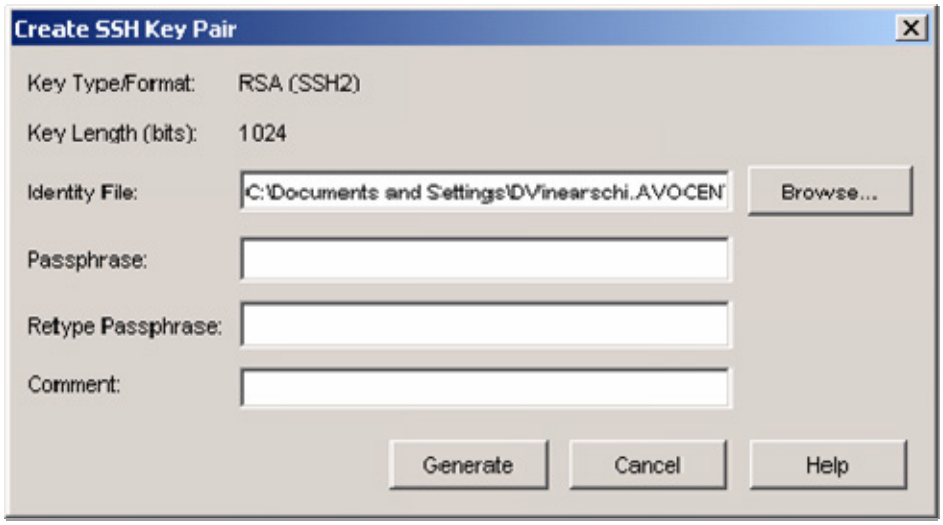
      -or-

      Click **Browse** to navigate to the path or file name containing an SSH key. The public key contained in the selected file will appear in the SSH Public Key field.

      -or-

      Click **Create.** The Create SSH Key Pair dialog box appears. The Identity File field contains the private key file name and path.

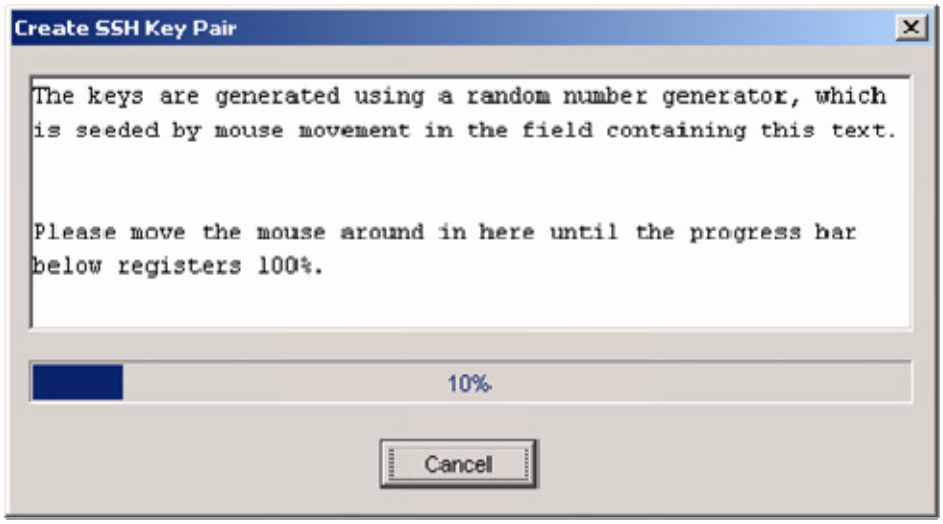
   b. Click **Browse** to specify a path and file name for the public or private key files to change the Identity File field content. By default, these key files are stored under <install directory>\"userkeys."



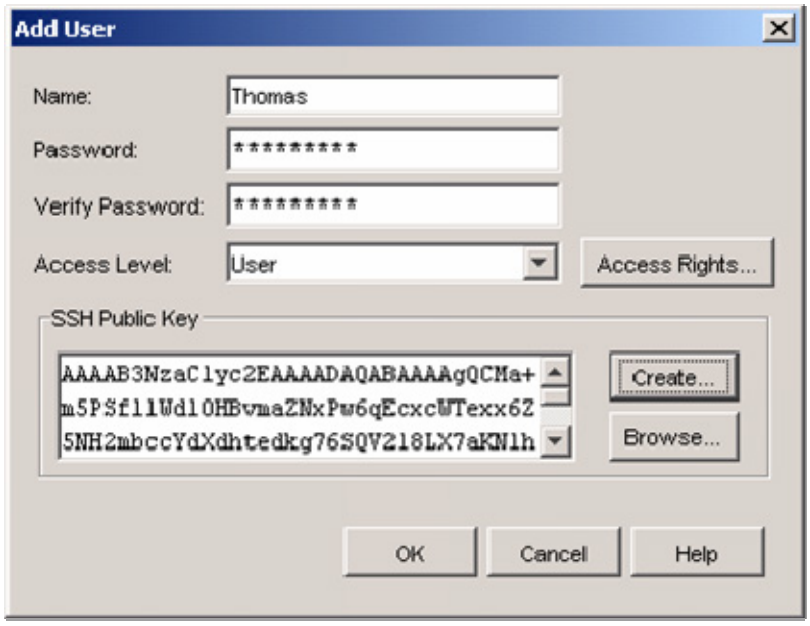
   c. Enter a secret pass phrase for accessing the private key file in the Passphrase field. Asterisks are displayed instead of the actual data you enter. If you leave this field blank, your key is not encrypted.
   d. Repeat the pass phrase in the Retype Passphrase field.

e. (Optional) Enter information in the Comment field.

f. Click **Generate.** The text area of the dialog box displays help information and senses movement as the mouse is dragged across it. Move the mouse to assist the random number generator. It passes a seed that is based on the mouse's location. A progress bar indicates the completion percentage.


Create SSH Key Pair
The keys are generated using a random number generator, which is seeded by mouse movement in the field containing this text.
Please move the mouse around in here until the progress bar below registers 100%.
10%
Cancel

When the completion percentage reaches 100, the dialog box closes, a confirmation dialog box appears and the generated key will appear in the SSH Public Key field of the Add User or Modify User dialog box.



4. Click **OK** to save the settings.

5. Click **Apply** to save any changes without exiting.

   -or-

   Click **OK** to save any changes and exit.

   -or-

   Click **Cancel** to exit without saving any changes.

Deleting a user for serial console switches

1. Select a user in the Users category.
2. Click **Delete.** The Confirm Deletion dialog box appears.
3. Click **Yes** to confirm the deletion.

   -or-

   Click **No** to exit the window without deleting the user.

Locking and unlocking user accounts for serial console switches

If the serial console switch is configured for Local Authentication and a user enters an invalid password five consecutive times, the Security Lock-out feature temporarily disables that account. If a user attempts to log in again, an error message appears from the software client application. All local accounts, except the Override Admin account are subject to this lock-out policy.

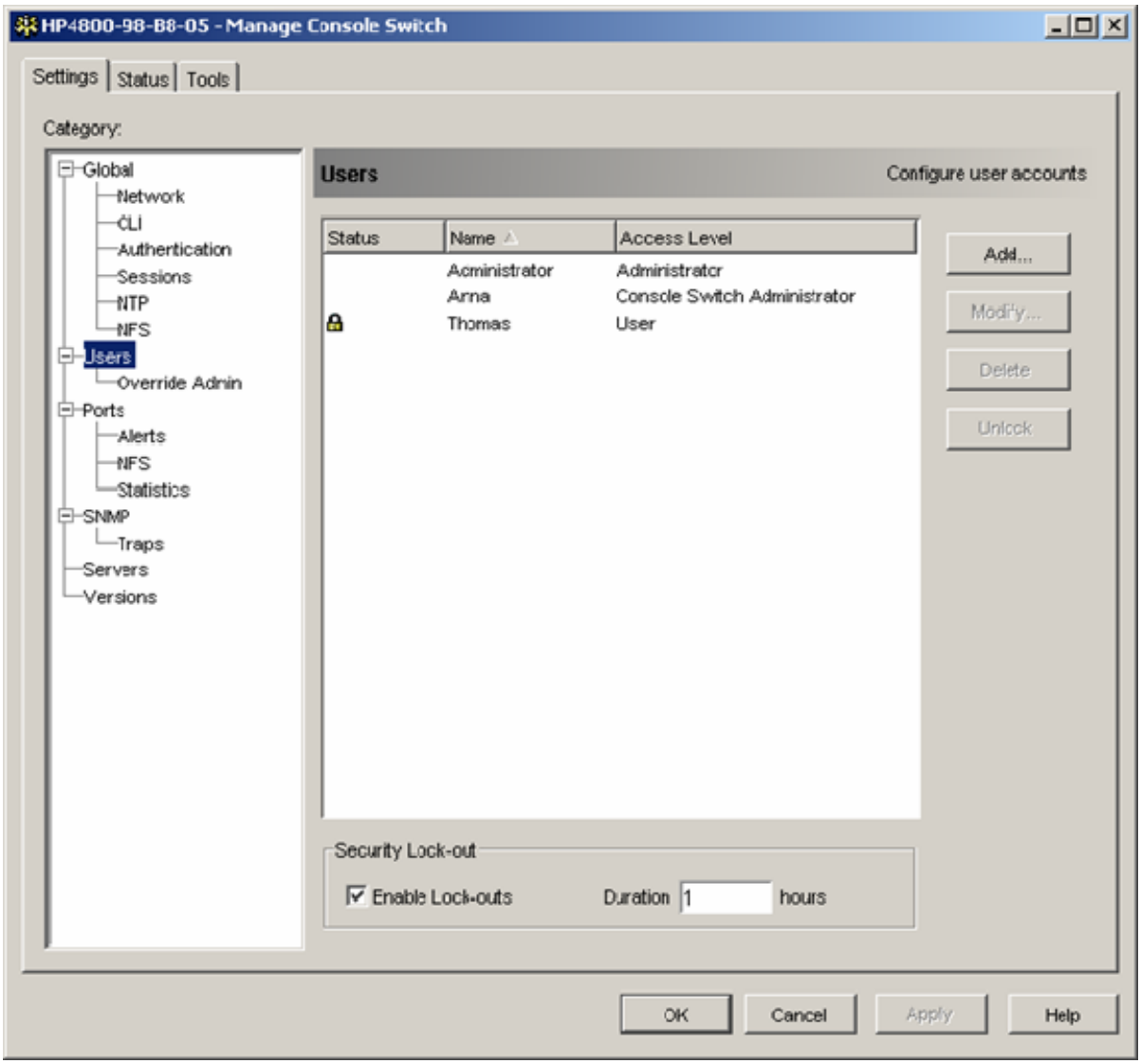
An administrator can specify the number of hours (1 to 99) that accounts are locked. When Enable Lock-outs is not selected, the Security Lock-out feature is disabled, and no users can be locked out.

If an account becomes locked, it remains locked until the number of hours specified in the Duration field have elapsed, the console switch is power cycled, or an administrator unlocks the local account using the Unlock function on this panel.

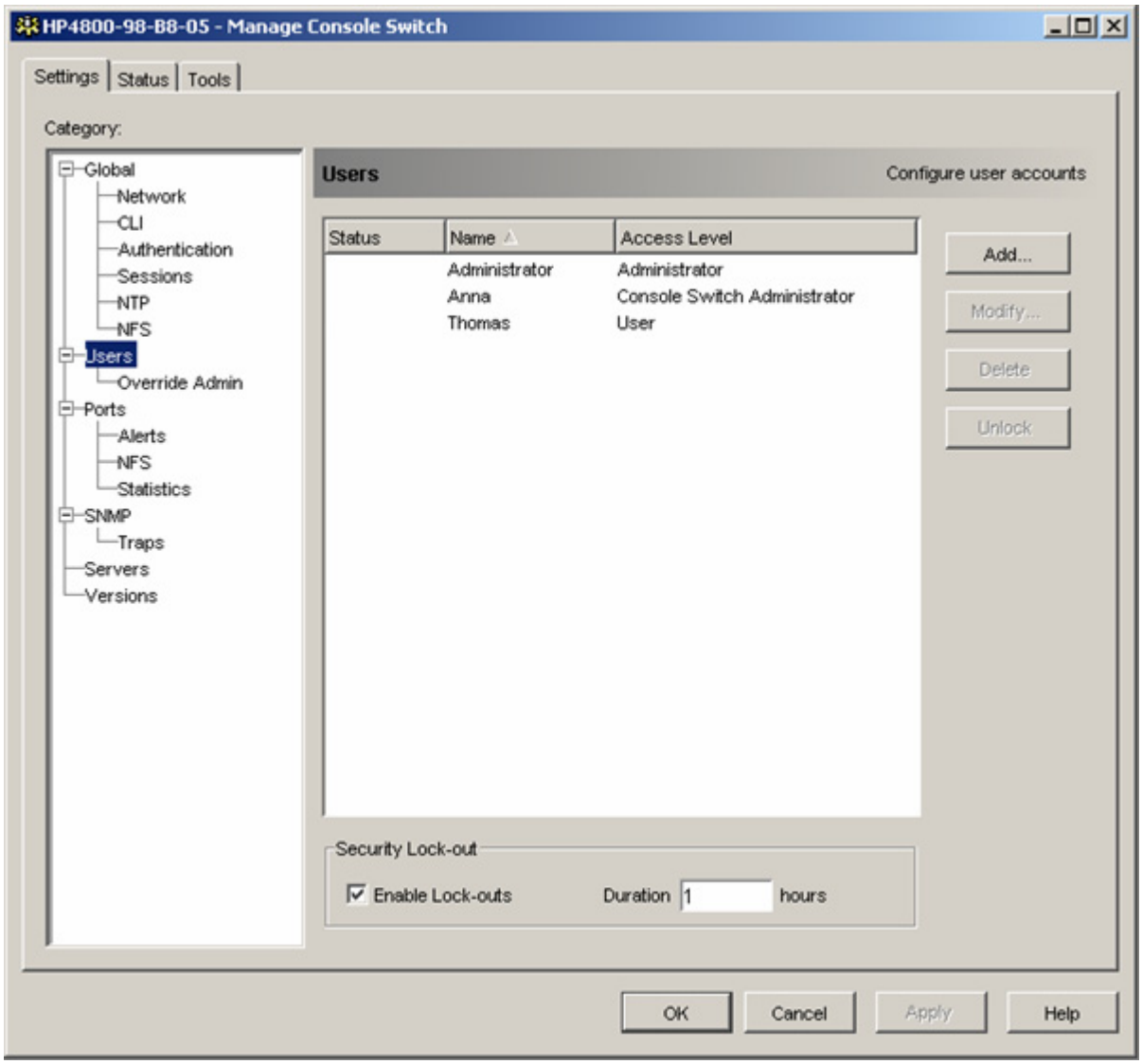
NOTE: If your account is locked and you have LDAP Authentication and Access Control enabled, your account must be unlocked through the Active Directory. Contact your active directory administrator for further details.

Unlocking an account for serial console switches

1. Select **Users.**



2. Click **Unlock.** The Lock icon next to the user name disappears.



3. Click **OK** or **Apply.** The user can log in.

   -or-

   Click **Cancel** to exit without saving.

Enabling or disabling a security lock-out

1. Select **Users.**
2. Select **Enable Lock-outs.** Enter the number of hours (1 to 99) in the lock-out period in the Duration field.

   -or-

   Clear **Enable Lock-outs.**
3. Click **Apply,** and then click **OK.**

NOTE: Disabling Security Lock-out has no effect on users who are already locked out.

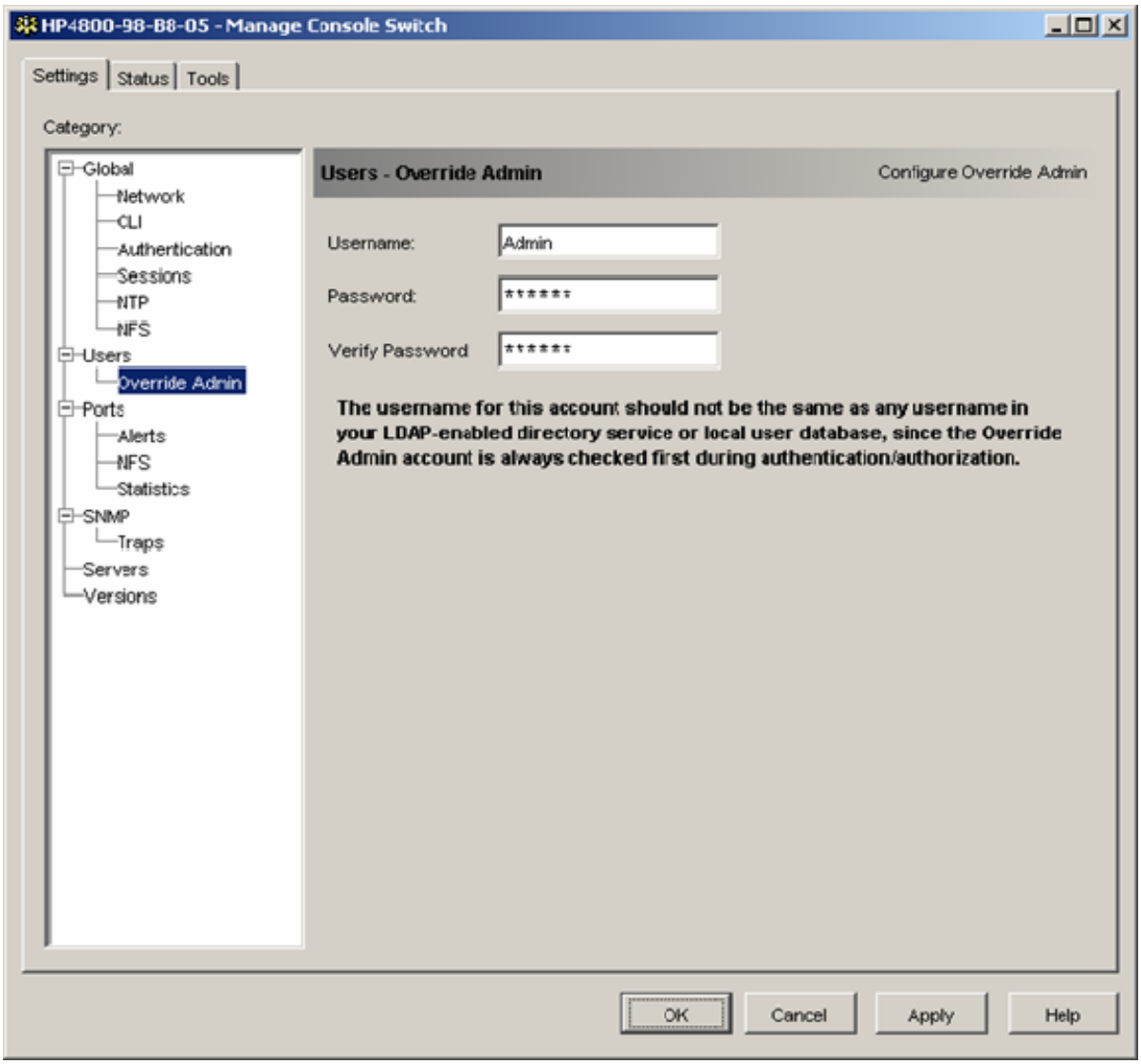
Specifying a security lock-out duration

1. Select **Users.**

2. Select **Enable Lock-outs.**
3. Enter the number of hours that a user is locked out (1 to 99) in the Duration field.
4. Click **Apply,** and then click **OK.**

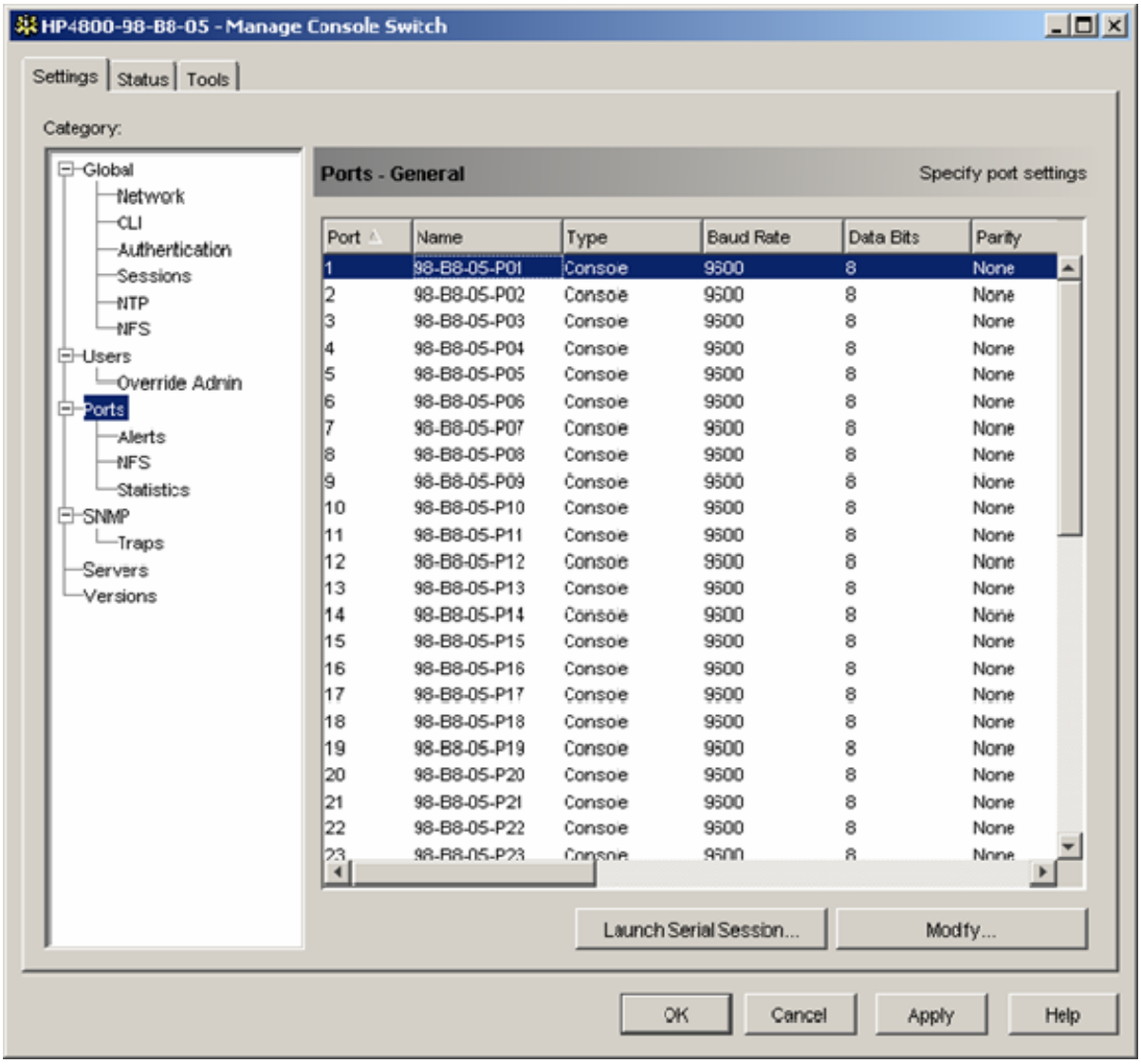
Override Admin subcategory for serial console switches

Override Admin is the one account that can be used to get into the serial console switch from a network, even if the local accounts are locked or do not exist or if LDAP is not working properly. The Override Admin account is a permanent account that cannot be deleted. It has the same access right privileges as a Console Switch Administrator. The ID and password should be closely held by authorities and should not be used as Admin or User accounts on a day-to-day basis. The Override Admin account name and password settings are accessible only to the Override Admin user (they must have access to the **Users** category and then select **Override Admin).**



Configuring port parameters for serial console switches

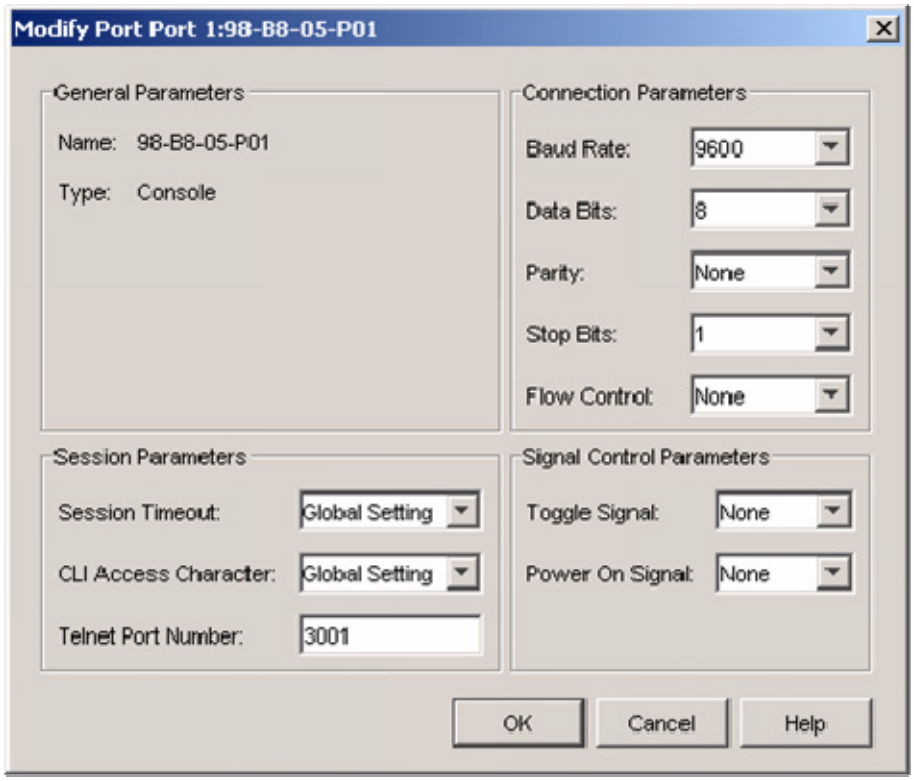
The Ports category lists all configuration parameters for the serial console switch ports. You can change any port parameter except the name and type.



Modifying port parameters for serial console switches

1. Select **Ports.**

2. Select a port, and click **Modify.** The Modify Port dialog box appears.



3. To change the session time-out, enter a value in the Session Timeout field in the range of 1 to 90.

   -or-

   Choose a value from the pull-down menu. If you choose **Global Setting,** the values specified in the Sessions category are used.

4. To change the CLI access character, enter a caret (^) and a character in the CLI Access Characters field. The character entered after the caret can be a letter or one of the following: left bracket ([), right bracket (]), caret (^), underscore (_), or backslash (\). To change the CLI access character, enter a single character in the CLI Access Character field. The caret represents the <Ctrl> key, and in combination with the next character can be used to access the console switch CLI mode during a server session. ^D or <Ctrl>D is the default.

   -or-

   Choose a value from the dropdown list. If you choose **Global Setting,** the value specified in CLI category are used.

NOTE: If you are modifying the dedicated CLI port (console port), then the CLI Access Character field is disabled.

5. Enter a value in the range of 3000 to 65000 in the Telnet Port Number field to change the Telnet port number.
6. Select a value from the dropdown menu in the Baud Rate field to change the baud rate.
7. Select a value from the dropdown menu in the Data Bits field to change the number of data bits.
8. Select a value from the dropdown menu in the Parity field to change the parity.
9. Select a value from the dropdown menu in the Stop Bits field to change the number of stop bits.
10. Select a value from the dropdown menu in the Flow Control field o change the flow control method. This value cannot share the same signal as the Power On Signal value.
11. Select a value from the dropdown menu in the Toggle Signal field to change the toggle signal.

NOTE: If you are modifying the dedicated CLI port, then the Toggle Signal field is disabled.

12. Select a value from the dropdown menu in the Power On Signal field to change the power on signal. This value cannot share the same signal as the Flow Control value.
13. Click **OK** to save the changes locally and exit the dialog box. If any field is invalid, an error message appears, and the focus is set to the field in error.

    -or-

    Click **Cancel** to exit the dialog box without saving the changes locally.
14. Click **Apply** to save any changes.

    -or-

    Click **OK** to save any changes and exit.

    -or-

    Click **Cancel** to exit the without saving any of the changes.

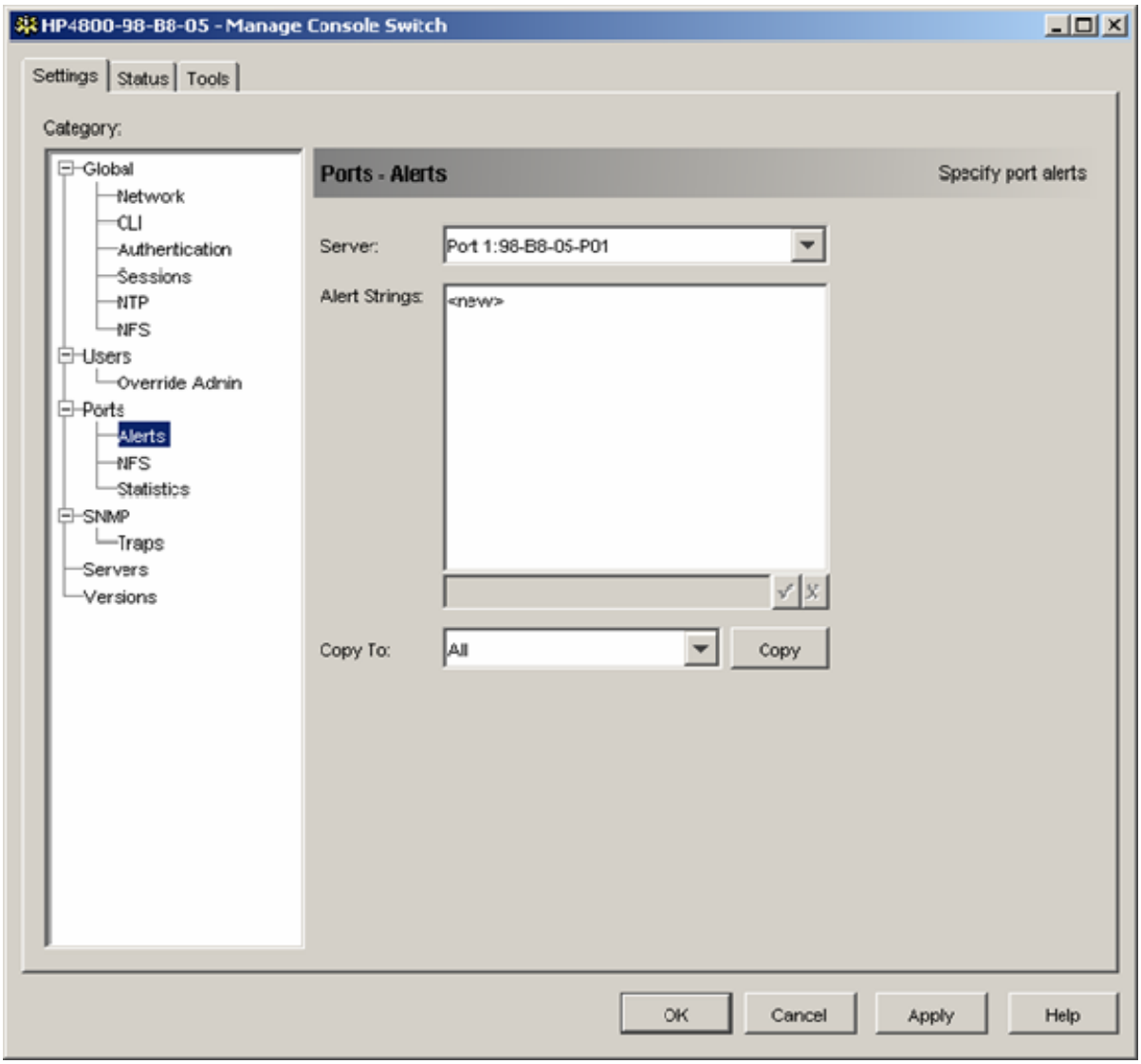
Configuring alert parameters for serial console switches

The Alerts subcategory lists the defined alert strings for a specified port. You can create, modify, or delete alert strings for each port (except the dedicated CLI port). Each port can have up to 10 alert strings.

To create, modify, or delete port alert strings:

1. Select **Ports>Alerts.**

2. Select a port or server from the Server dropdown menu. The Alert Strings list contains the alert strings that have already been defined for that server. If fewer than 10 alert strings have been defined, the list also contains a <new> entry.



3. To create an alert string:
   a. Select **<new>** in the Alert Strings list.
   b. In the text box under the list, enter three to 32 characters.
   c. When complete, click **Check Mark** next to the text box.
4. To modify an alert string:
   a. Select the string in the Alert Strings list. The selected string appears in the text box under the list.
   b. Modify the alert string in the text box.
   c. When complete, click **Check Mark** next to the text box.
5. To delete an alert string:
   a. Select the string in the Alert Strings list.
   b. Click **X** below the list.
6. To copy all the alert strings defined for one port to another port or to all ports:

a. Select the port from which to copy the alert strings in the Server dropdown menu. The alert strings from the port are listed.
b. Select the port to which the alert strings are copied from the Copy To dropdown menu.

   -or-

   Select **All,** which copies the alert strings to all ports on this console switch.
c. Click **Copy.** You are prompted to confirm the copy operation.
d. Click **Yes** to confirm the copy.

   -or-

   Click **No** to cancel the copy.

7. Click **Apply** to save any changes without exiting.

   -or-

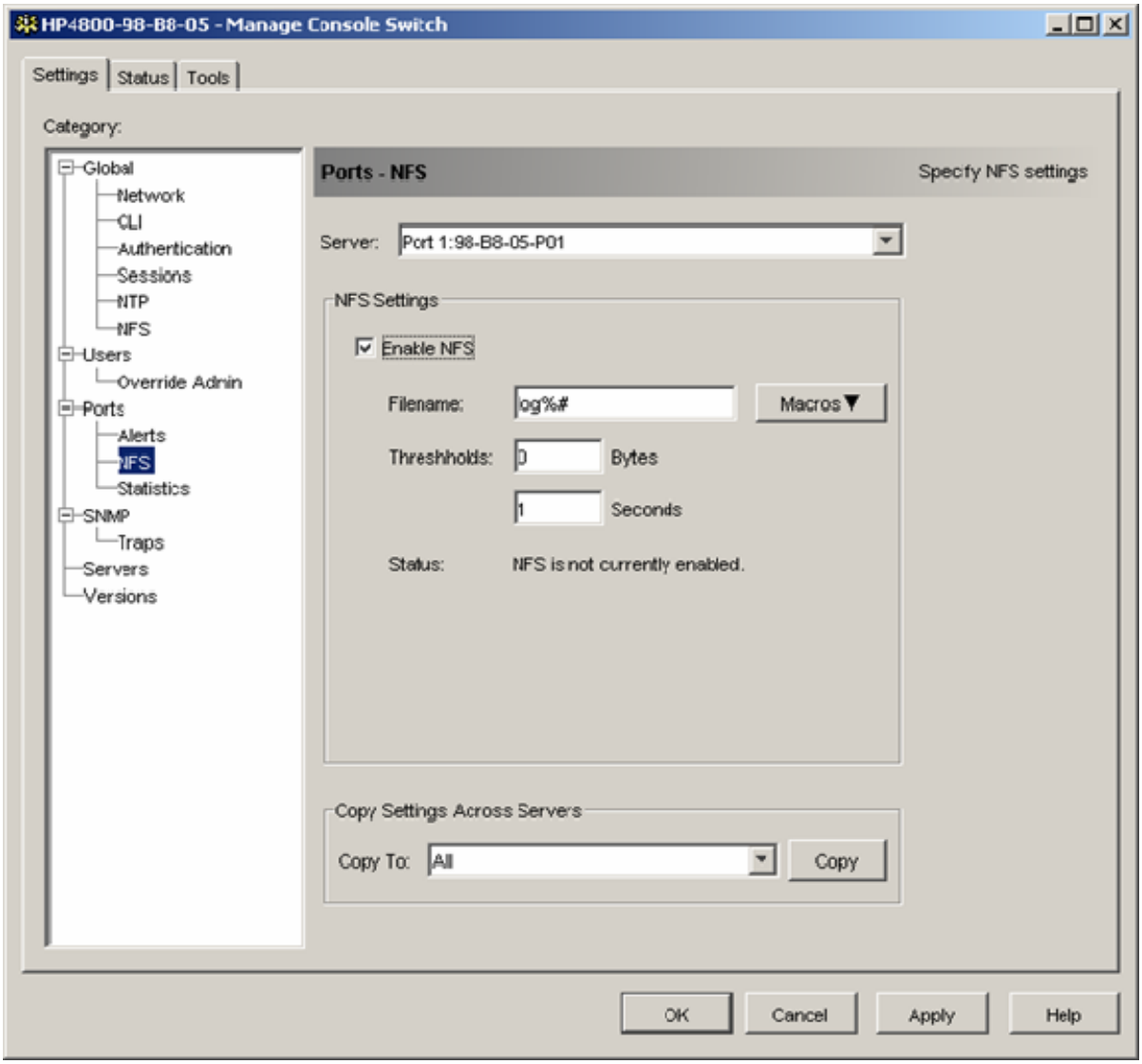
   Click **OK** to save any changes and exit.

   -or-

   Click **Cancel** to exit without saving any changes.

Viewing NFS parameters for serial console switches

The NFS subcategory enables you to configure NFS parameters on a port. For more information, see the documentation included with your serial console switch.



Viewing statistics parameters for serial console switches

The Statistics subcategory displays serial console switch port statistics and EIA signal settings. To display port statistics, select **Ports>Statistics.**

The following display:

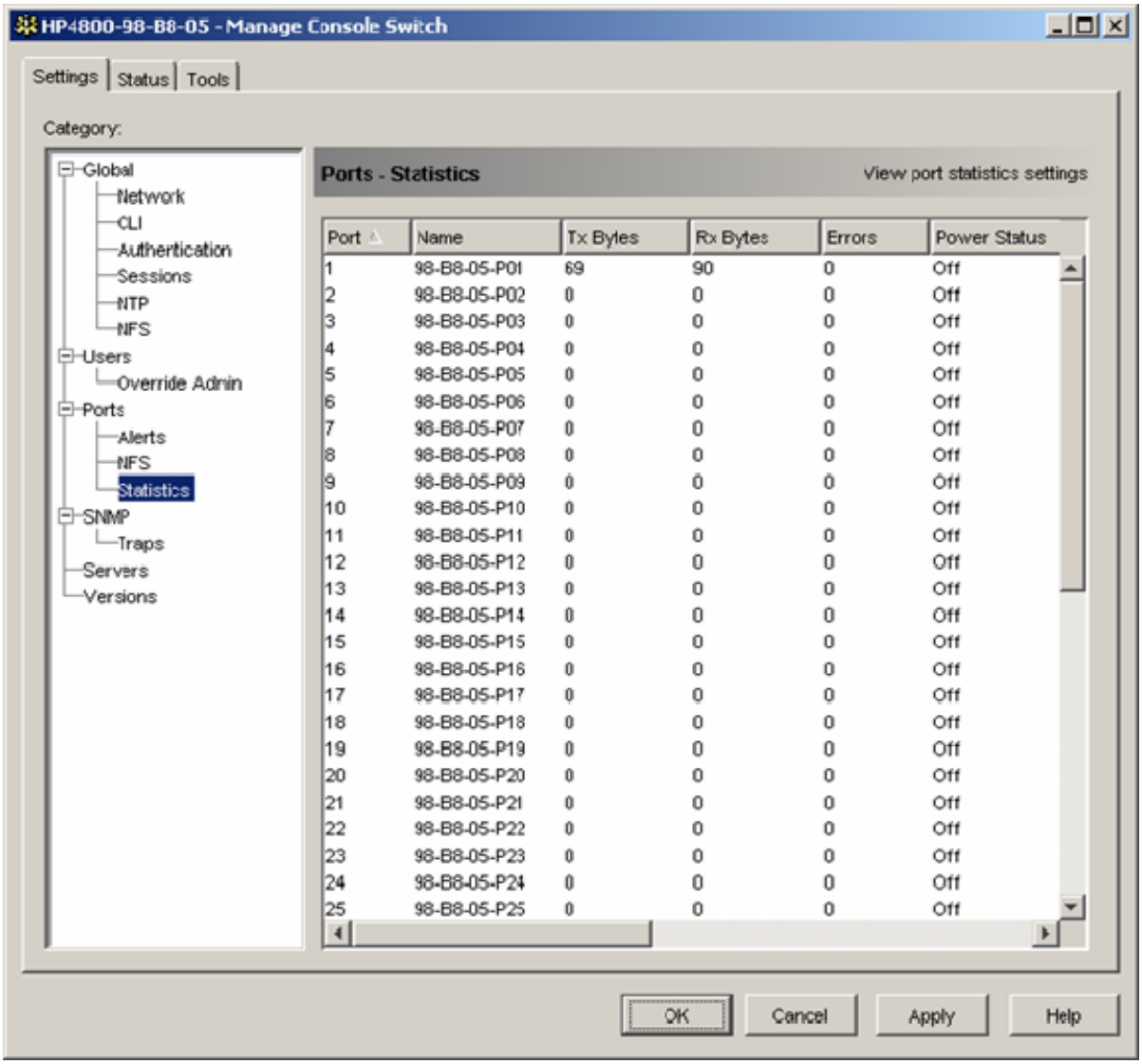
- The Port and Name columns contain the number and name of the port. The dedicated CLI port contains the name "CLI" with no port number.
- The Tx Bytes and Rx Bytes columns indicate the number of bytes transmitted and received.
- The Errors column indicates the number or errors.
- The Power Status column indicates the power status of the port.

  The possible values are:

  - On = Power on *On = Power on and value toggled since last poll
  - Off = Power off *Off = Power off and value toggled since last poll

- The remaining columns contain strings that represent a portion of the EIA signals of the port:
  - TD = Transmit Data DSR = Data Set Ready
  - RD = Receive Data DCD = Data Carrier Detect
  - RTS = Request to Send RI = Ring Indicator
  - CTS = Clear to Send SIG3 = SIG3
  - DTR = Data Terminal Ready SIG4 = SIG4

  The possible values in each of these columns are:
  - On = Power on *On = Power on and value toggled since last poll
  - Off = Power off *Off = Power off and value toggled since last poll



Configuring SNMP parameters for serial console switches

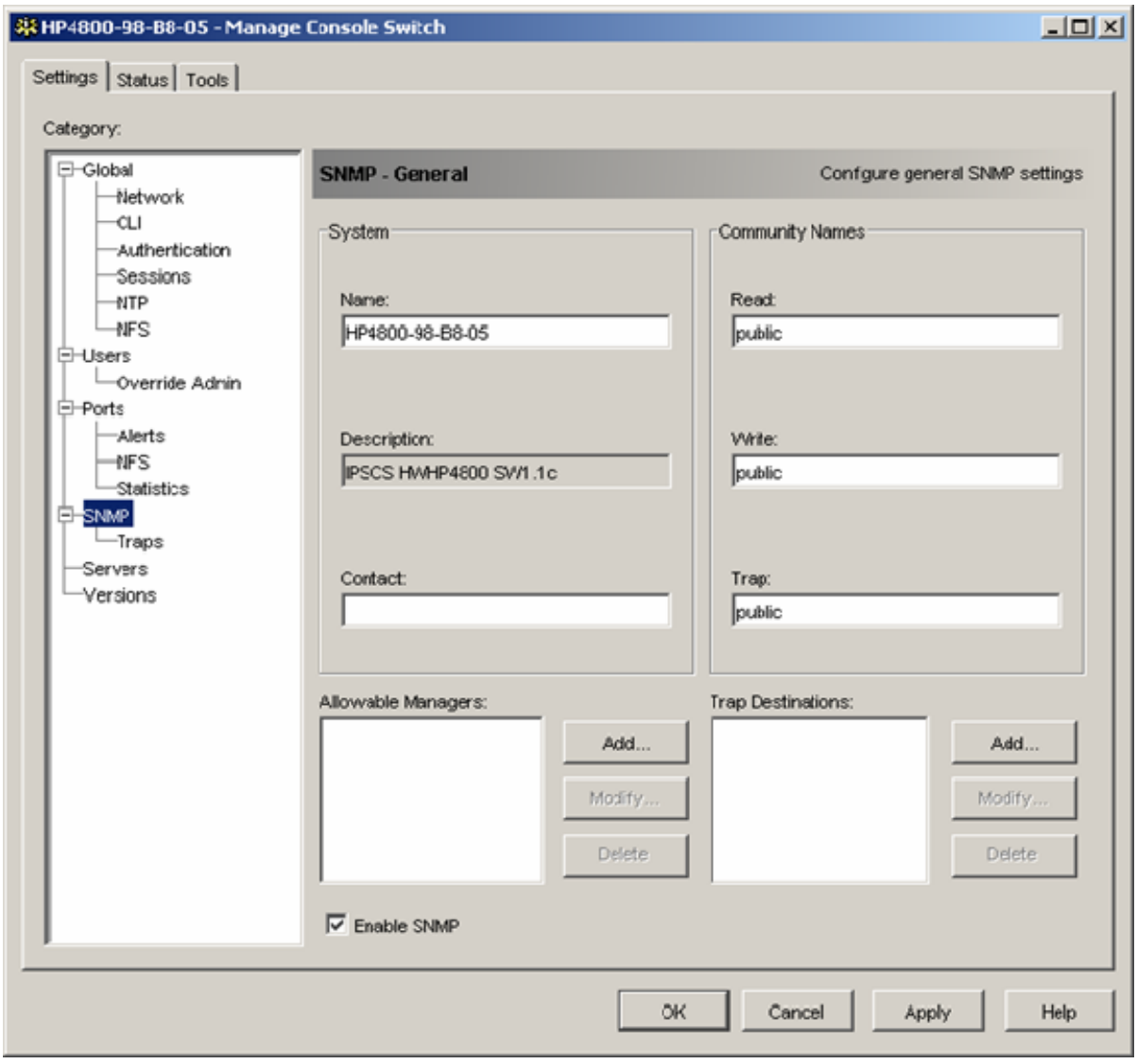
SNMP is a protocol used to communicate management information between network management applications and serial console switches. Other SNMP managers can communicate with your serial console switch by accessing MIB-II and the public portion of the enterprise MIB. MIB-II is a standard MIB that many SNMP servers support.

When you select the SNMP category for the first time, the Manage Console Switch window retrieves the SNMP parameters from the unit. The SNMP category enables you to enter system information and community strings, designate the management stations that can manage the serial console switch, and retrieve SNMP traps from the serial console switch. If you select Enable SNMP, the unit responds to SNMP requests over UDP port 161. Port 161 is the standard UDP port used to send and retrieve SNMP messages.

NOTE: The Manage Console Switch window uses SNMP within a secure tunnel to manage console switches. For this reason, UDP port 161 must be open on firewalls. You must expose UDP port 161 to monitor console switches through third-party SNMP-based management software.

Up to four allowable managers can be defined, and all IP addresses are defined as blank by default. If all four entries are left blank, all IP addresses are authorized to read and write to the serial console switch, provided that they have the correct SNMP community strings. If any of the SNMP allowable manager entries are not blank, then only the defined SNMP allowable managers have access.

The allowable managers setting does not affect whether the HP IP Console Viewer can view or manage the serial console switch.



Configuring general SNMP parameters for serial console switches

1. Select **SNMP.**
2. Select **Enable SNMP** to configure the serial console switch to respond to SNMP requests over UDP port 161.
3. In the System section, enter the fully qualified domain name of the system in the Name field, a description in the Description field, and a contact person in the Contact field.

IMPORTANT: If you are using LDAP or are planning to use LDAP in the future, the name in the Name field must match the computer name that represents the console switch in the Active Directory.

4. Enter the community names in the **Read** field, **Write** field, and **Trap** field. These specify the community strings that must be used in SNMP actions. The read and write strings apply only to SNMP over UDP port 161 and act as passwords that protect access to the console switch. The values can be up to 64 characters in length.
5. Add up to four SNMP management stations that are allowed to monitor the serial console switch, such as HP Systems Insight Manager, or leave the field blank to allow any SNMP management station to manage the serial console switch. For more information, see "Adding, modifying, and deleting allowable managers for serial console switches (on page 128)."
6. Add up to four SNMP trap destinations to which this serial console switch sends traps and in the Trap Destination field. For more information, see "Adding, modifying, and deleting trap destinations for serial console switches (on page 129)."
7. Click **OK** to save the settings and close the window.

   -or-

   Click **Apply** to save the settings and remain in the open window.

   -or-

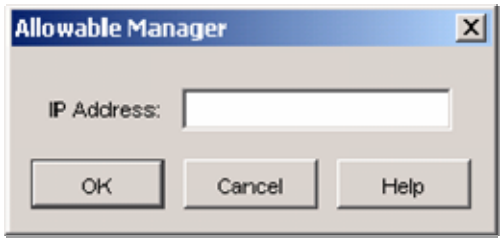
   Click **Cancel** to exit the window without saving.

Adding, modifying, and deleting allowable managers for serial console switches

In the Allowable Managers area, you can specify up to four SNMP management entities to monitor this serial console switch, or leave this area blank to allow any station to monitor the serial console switch. You can also modify or delete an existing allowable manager.

To add an allowable manager:

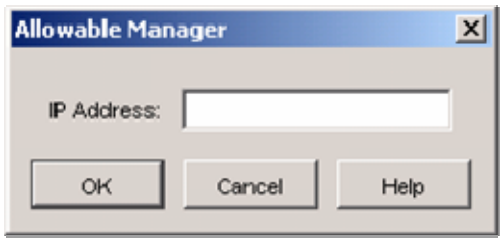
1. Click **Add.** The Allowable Manager dialog box appears.



2. Enter the IP address of the management station.
3. Click **OK** to add the management station.

To modify an allowable manager:

1. Select and entry in the Allowable Managers list, and click **Modify.** The Allowable Manager dialog box appears.



2. Modify the entry as needed.
3. Click **OK** to save the changes.

To delete an allowable manager:

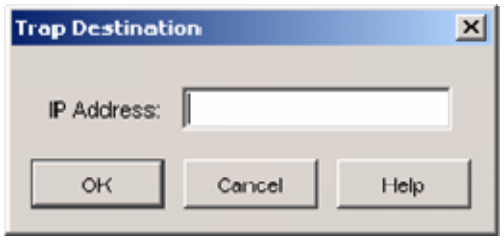
1. Select an entry in the Allowable Managers list, and click **Delete.** You will be prompted to confirm the deletion.
2. Click **Yes** to confirm the deletion.

Adding, modifying, and deleting trap destinations for serial console switches

In the Trap Destinations area, you can specify up to four SNMP trap destinations to which this serial console switch sends traps. You can also modify and delete existing trap destinations.

To add a trap destination:

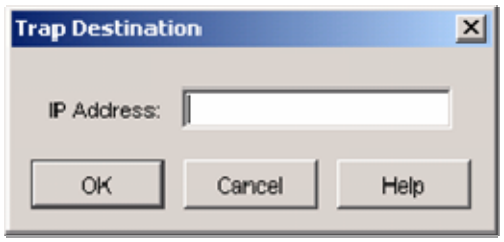
1. Click **Add.** The Trap Destination dialog box appears.



2. Enter the IP address of the trap destination.
3. Click **OK** to add the trap destination.

To modify a trap destination:

1. Select an entry in the Trap Destination list, and click **Modify.** The Trap Destination dialog box appears.



2. Modify the entry as needed.
3. Click **OK** to save the changes.

To delete a trap destination:

1. Select an entry in the Trap Destinations list, and click **Delete.** You are prompted to confirm the deletion.
2. Click **Yes** to confirm the deletion.

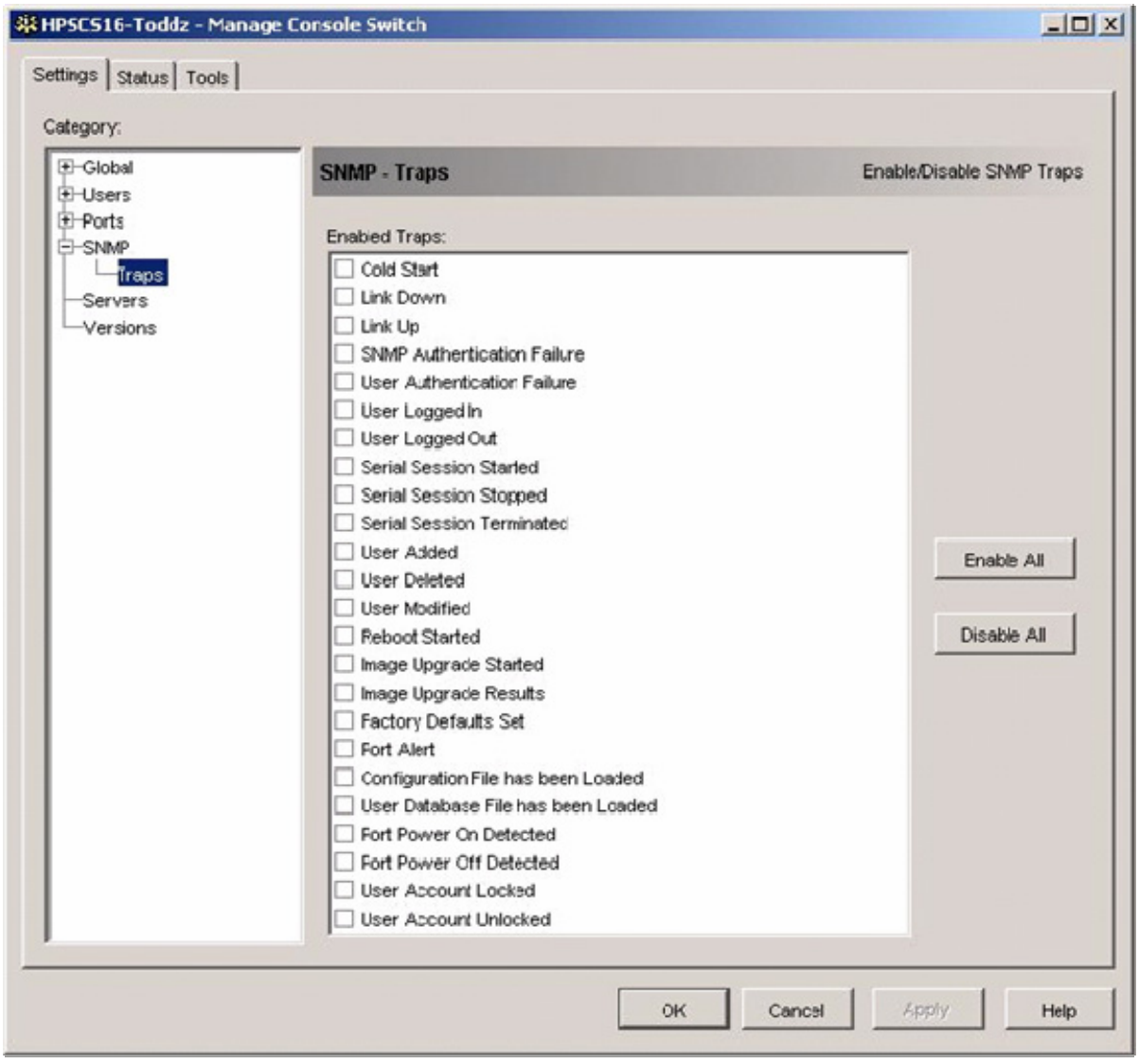
Configuring trap parameters for serial console switches

An SNMP trap is a notification sent by the serial console switch to a management station to indicate that an unusual event has occurred in the switch that might demand further attention. You can specify what SNMP traps are sent to the management stations by clearing or selecting the appropriate checkboxes in the list (the SNMP Authentication Failure Trap is not selected by default).

When you select the Traps category for the first time, the Manage Console Switch retrieves and displays a list of SNMP traps from the serial console switch. You can select Enable All or Disable All to easily select or clear the entire list.

NOTE:

The CPQSERIAL.MIB file is provided on the HP IP Console Viewer CD to be used with HP Systems Insight Manager or other SNMP management stations to properly receive SNMP traps.

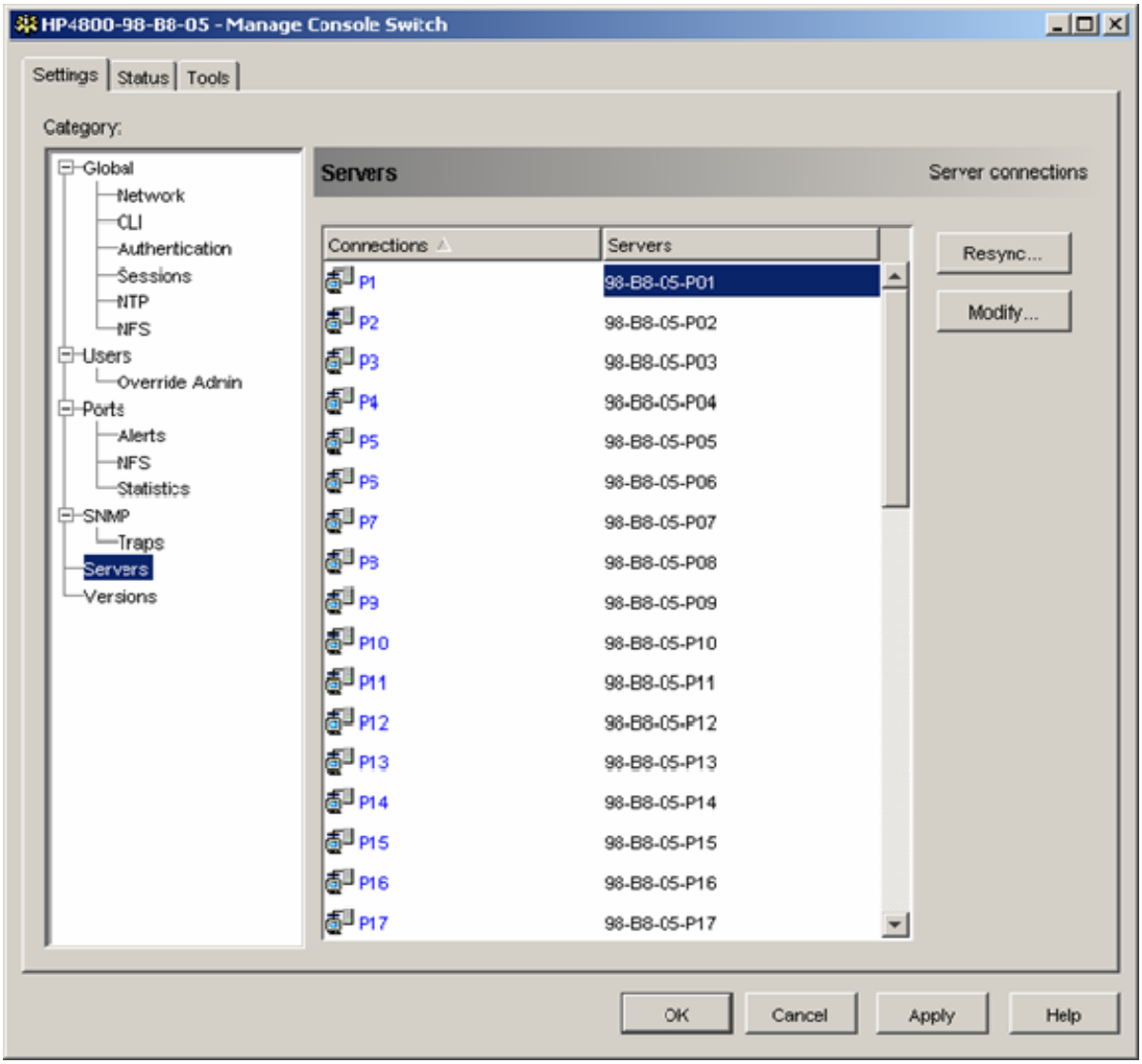


Viewing server parameters for serial console switches

The Servers category displays connection information for each server. The Connections column identifies the port to which the server is connected. If there is no server connection, the Servers column indicates None.

Click a connection to launch the Serial Session Viewer.

You can resynchronize the database on your system with the database on the serial console switch from this category.



Modifying server names for serial console switches

The Servers category can be used to modify the port on the serial console switch that the server is connected to and in the HP IP Console Viewer main window.

1. From the Manage Console Switch window, select **Servers.**
2. Highlight the port in the Servers column that you want to modify. You can modify only one port at a time.

3. Click **Modify.** The Modify dialog box appears with the current name of the server as stored in both the console switch and the client database (not necessarily the same).
4. Enter the new name of the server in the New Name: field.
5. Click **OK** to change the server name.
6. Repeat steps 1 through 5 for every server name that you want to change.
7. Click **Apply** to save any changes.

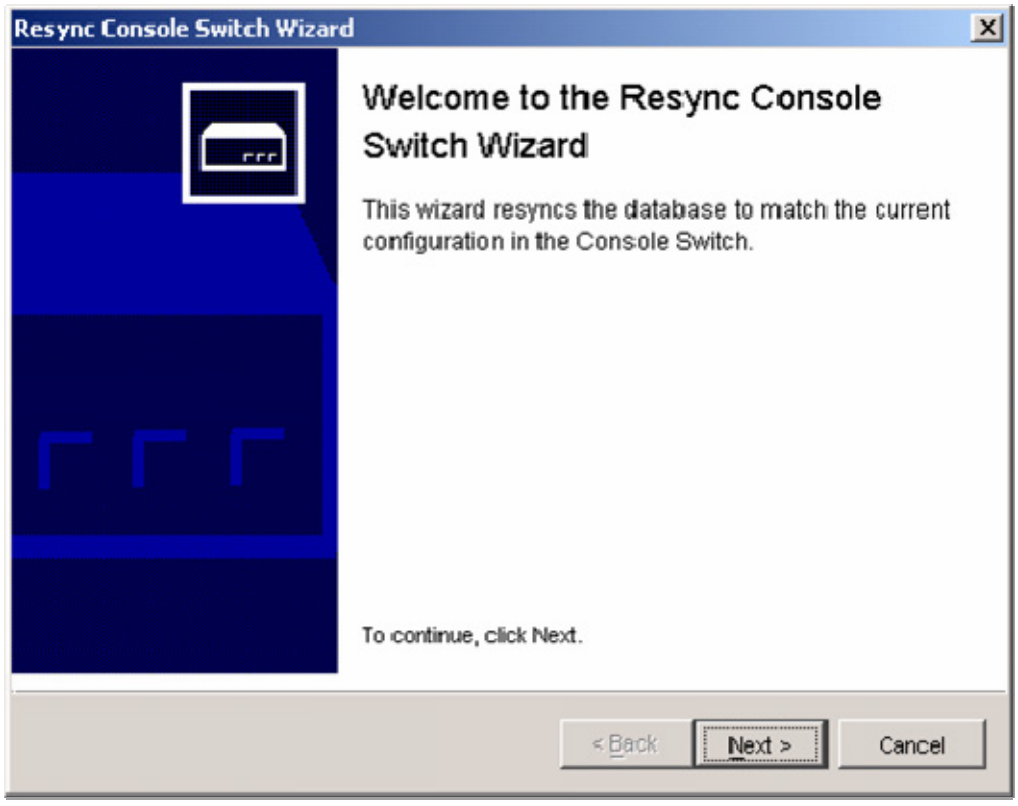
Resynchronizing the server listing for serial console switches

During the resynchronization process, a warning message indicates that the database is updated to match the current configuration in the serial console switch. This warning contains a checkbox that indicates whether servers that are configured with default names should be excluded. If servers are excluded, they are not added to (or they can be removed from) the database if they already exist in the database. Excluded servers are removed only from the database if there are no other connections to the server.

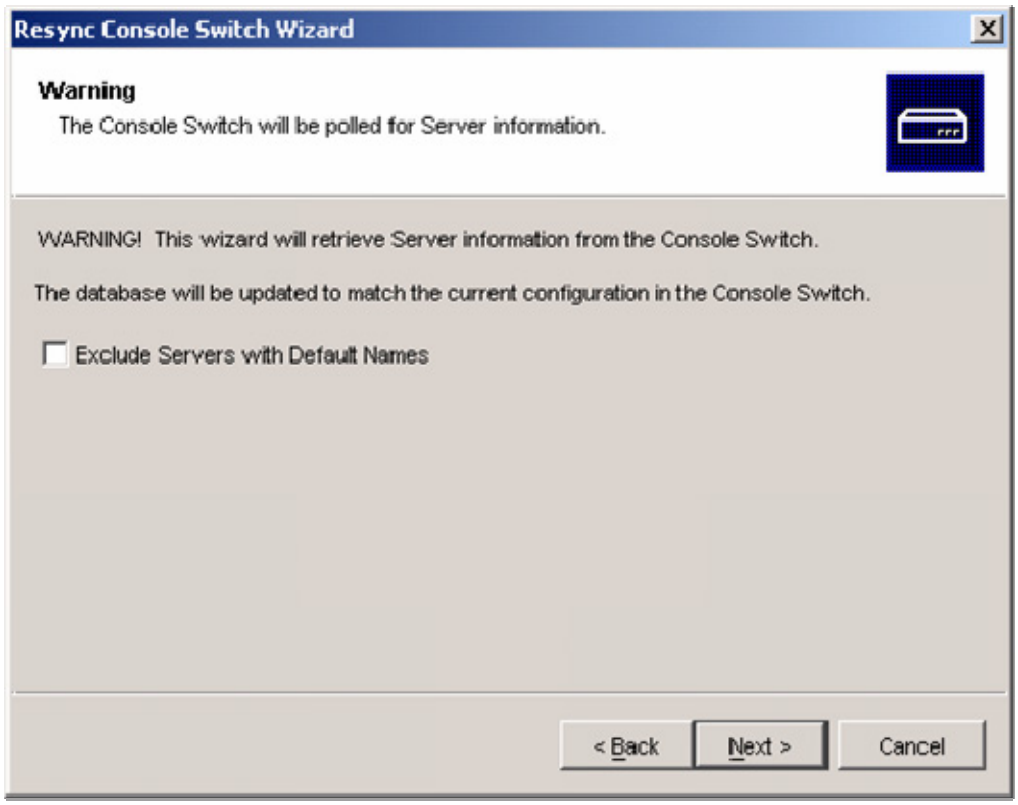
NOTE: This procedure resynchronizes only the HP IP Console Viewer client that you use to resynchronize. If you maintain multiple HP IP Console Viewer clients, save your resynchronized local database, and load it into the other HP IP Console Viewer clients to ensure consistency.

To resynchronize the server list:

1. Select **Servers.**
2. Click **Resync.** The Welcome to the Resync Console Switch Wizard window appears.

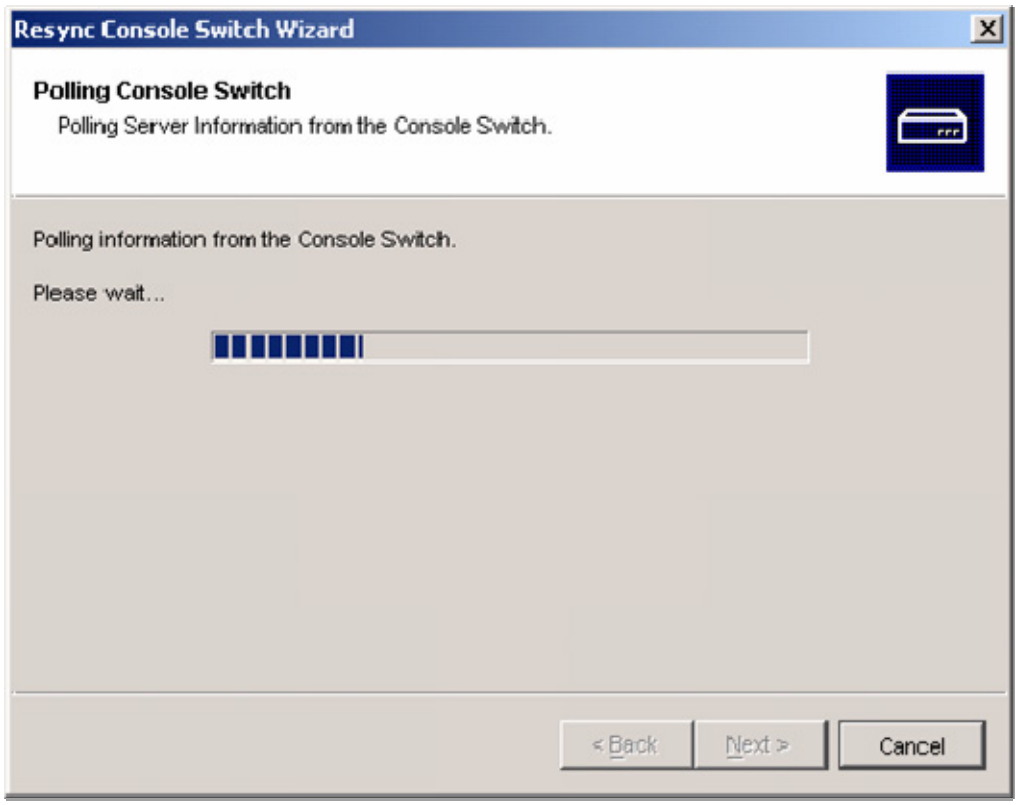

Resync Console Switch Wizard
Welcome to the Resync Console Switch Wizard
This wizard resyncs the database to match the current configuration in the Console Switch.
To continue, click Next.
< Back
Next >
Cancel

3. Click **Next.** The Warning window appears, indicating that the database is updated to match the current configuration in the serial console switch.


Resync Console Switch Wizard
Warning
The Console Switch will be polled for Server information.
WARNING! This wizard will retrieve Server information from the Console Switch.
The database will be updated to match the current configuration in the Console Switch.
Exclude Servers with Default Names
< Back
Next >
Cancel

4. Select or clear the **Exclude Servers with Default Names** checkbox.

5. Click **Next.** A Polling Console Switch message box appears with a progress bar, indicating that serial console switch information is being retrieved.

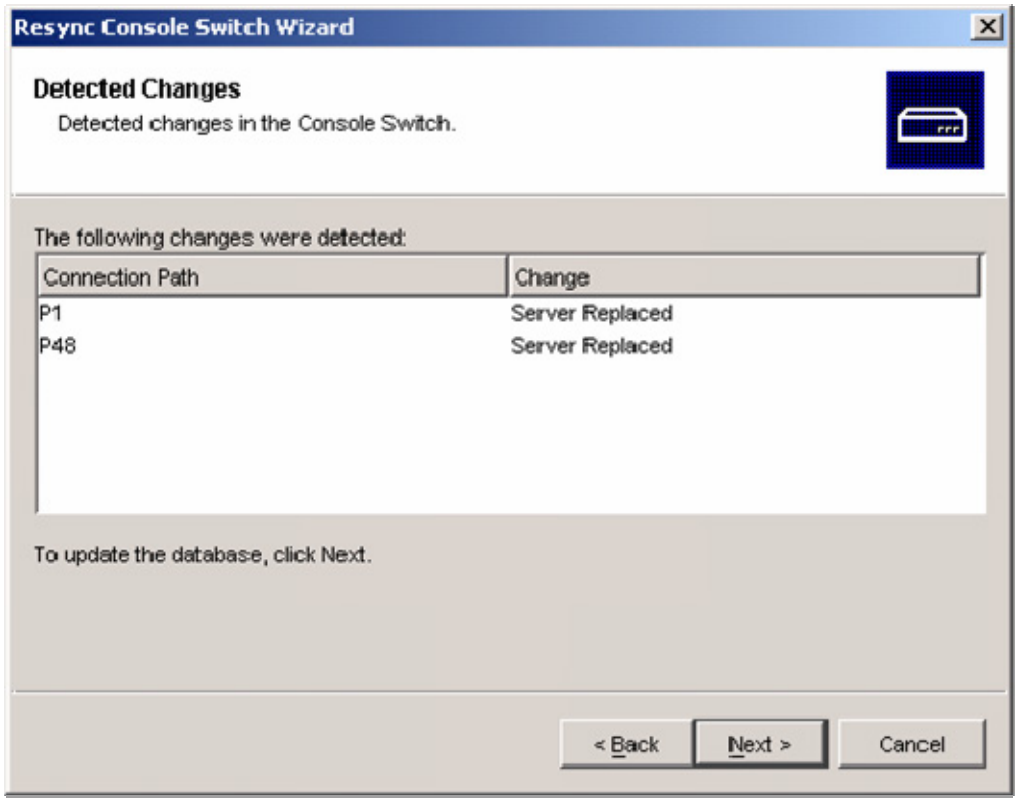


If no changes were detected in the serial console switch, the Completing the Resync Console Switch Wizard page appears. Click **Finish** to exit.

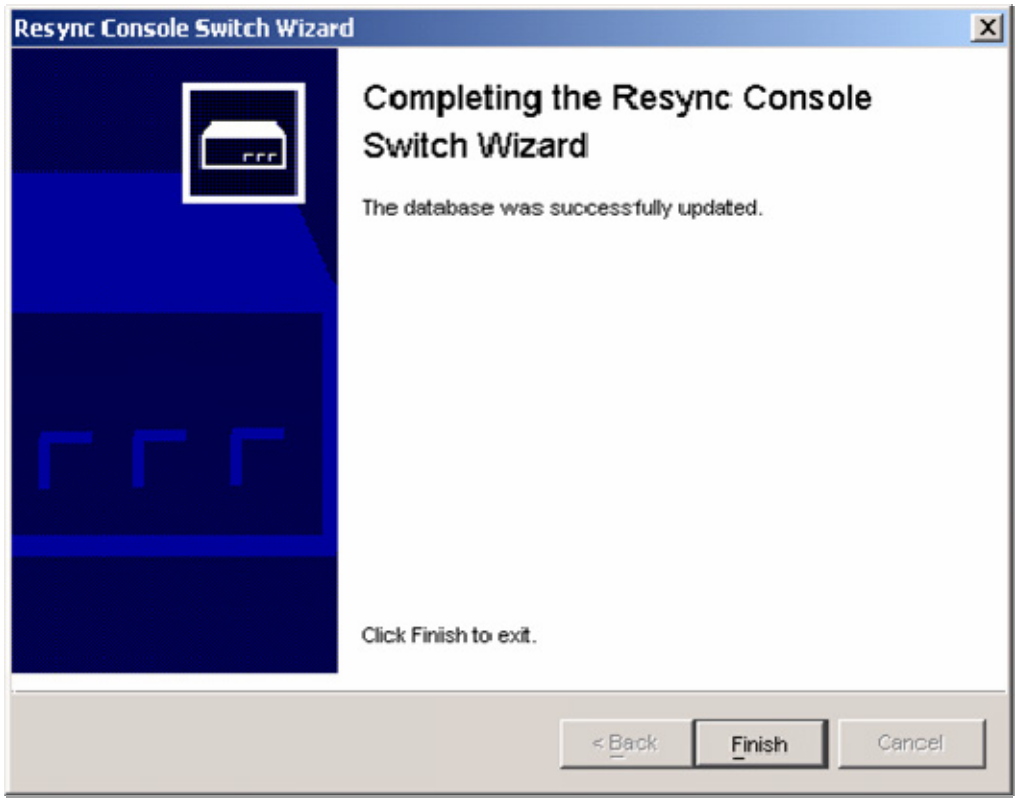
Resync Console Switch Wizard
Completing the Resync Console Switch Wizard
There were no changes detected in the Console Switch. The database is in sync with the Console Switch.
Click Finish to exit.
< Back
Finish
Cancel

-or-

If server changes were detected, the Detected Changes window appears.



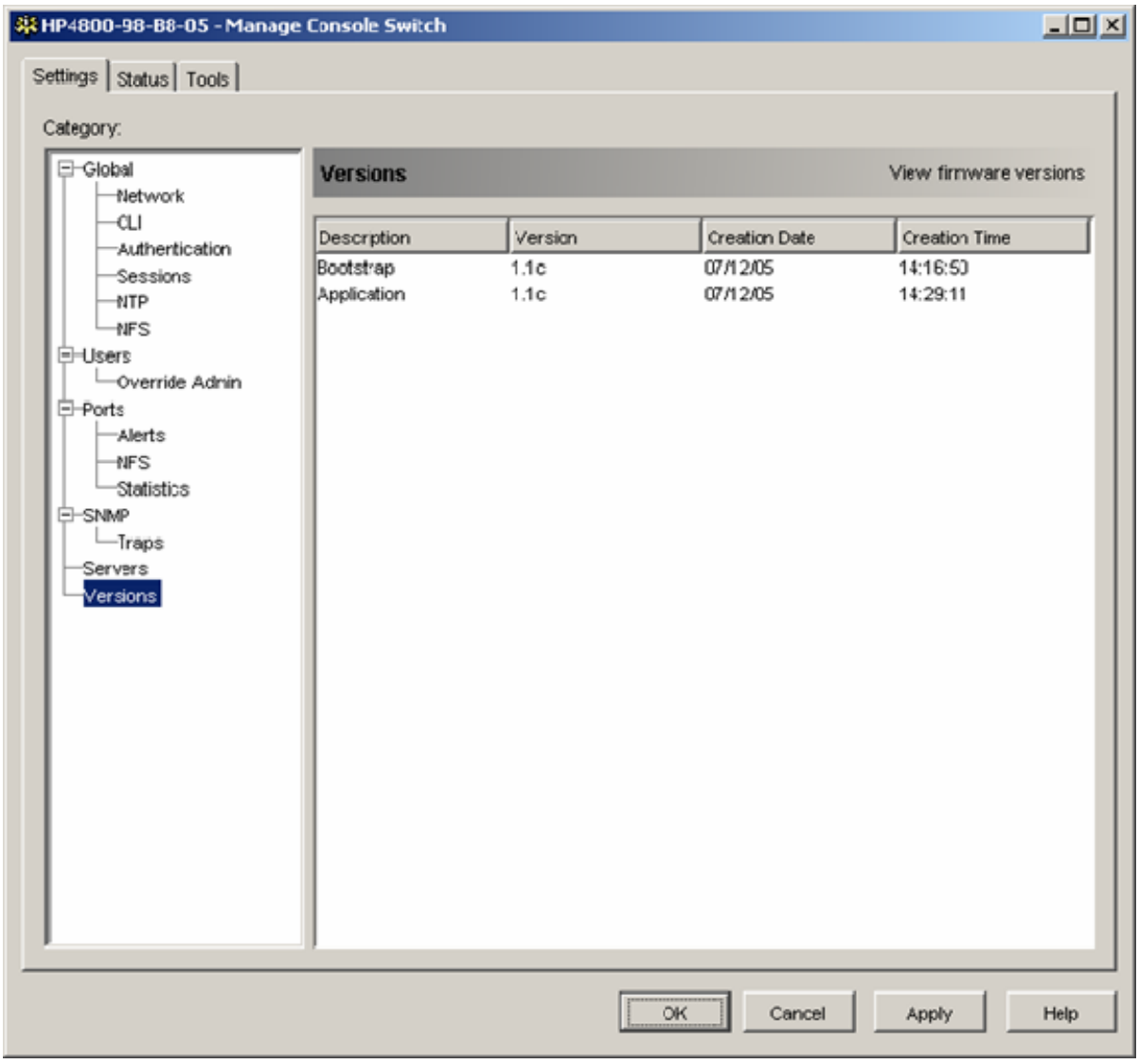
6. Click **Next** to update the database.
7. Click **Next.** The Completing the Resync Console Wizard window appears.



8. Click **Finish** to exit.

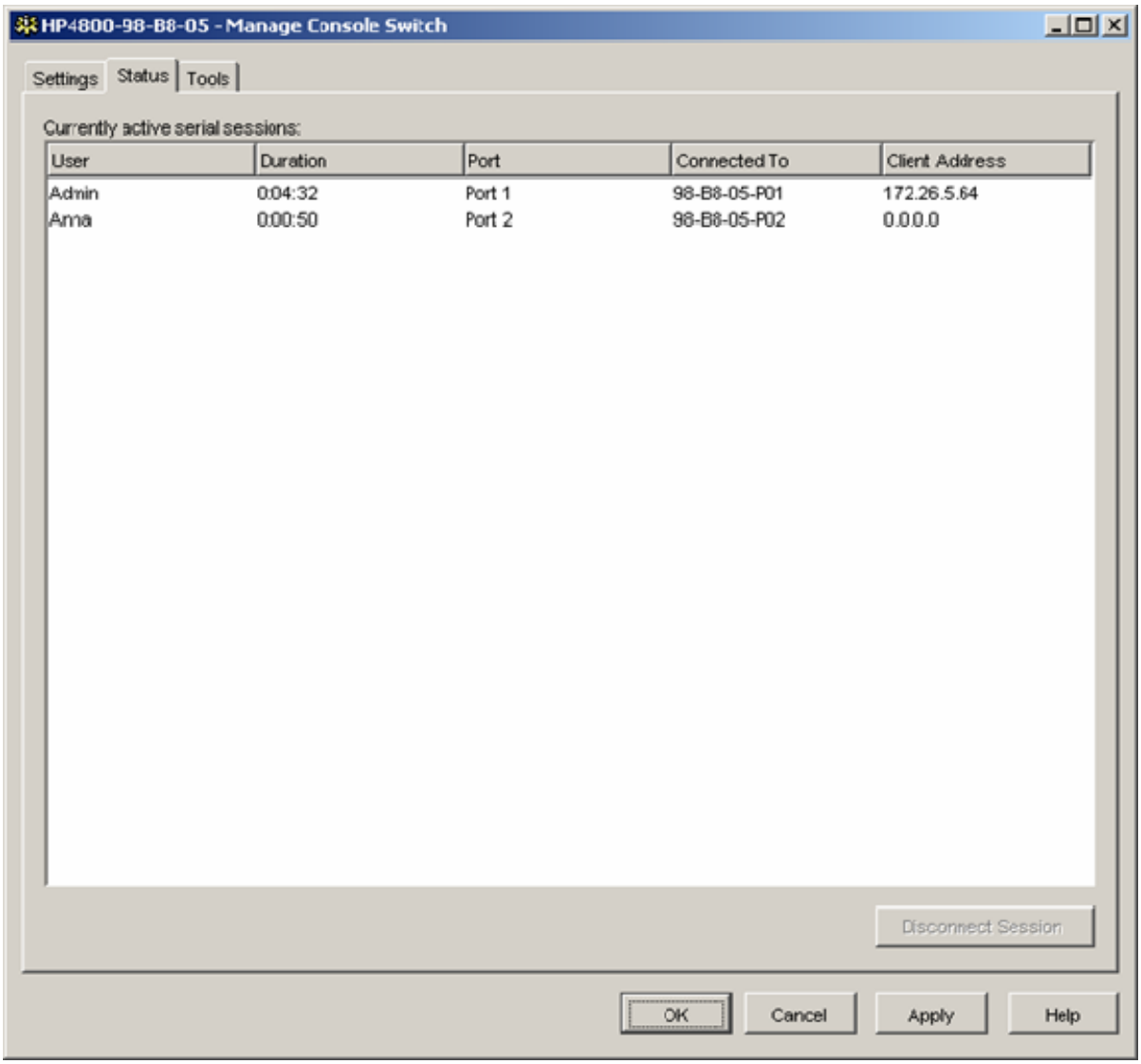
Viewing version parameters for serial console switches

When you select the Versions category for the first time, the Manage Console Switch window retrieves the firmware versions from the serial console switch itself.



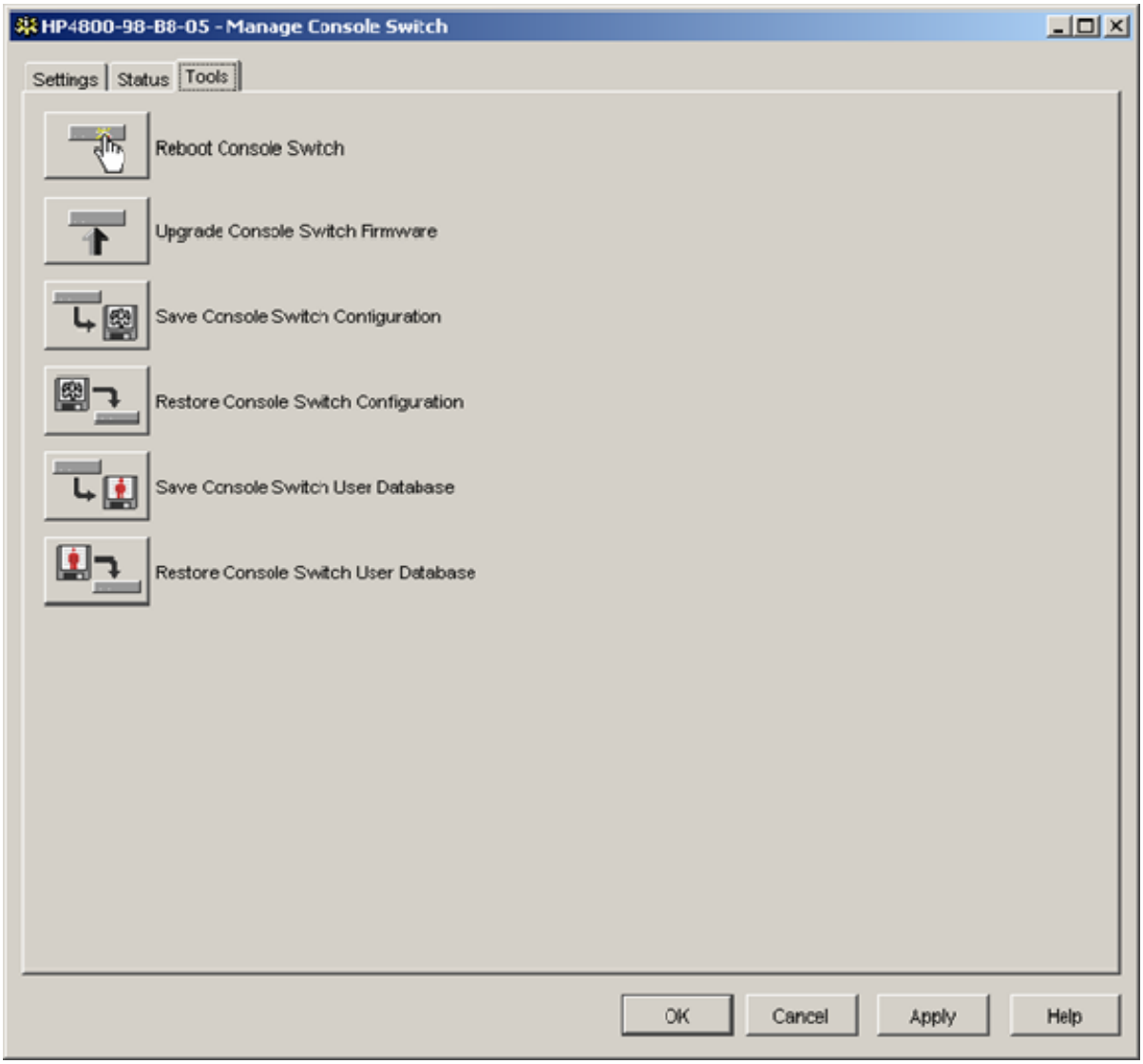
Viewing the Status tab for serial console switches

You can view and disconnect the current active user connections and unlock user accounts by using the Status tab in the Manage Console Switch window. You can view the length of time users have been connected, the port on the serial console switch that the server is connected to, and their system addresses.



Using the Tools tab for serial console switches

The Tools tab enables you to reboot, upgrade firmware, and save and restore both configuration and user database files.



Rebooting the serial console switch

You can reboot the serial console switch using the Tools tab on the Manage Console Switch window. Clicking the Reboot Console Switch button causes the serial console switch to broadcast a disconnect message to any active users, then logs out the current user, and immediately reboots the serial console switch.

IMPORTANT: You must wait a minimum of 60 seconds after powering up to complete the boot cycle before performing any console switch operations. Attempting to access servers during the boot process might cause system errors that require a hardware reboot.

To reboot the serial console switch:

1. Select **Tools.**
2. Click **Reboot Serial Console Switch.** A reboot warning appears.

3. Click **Yes.**

Wait 60 seconds after powering up before performing any console switch operations.

Upgrading serial console switch firmware

You can upgrade the serial console switch firmware by using TFTP or file system.

NOTE: If you made changes in the Settings tab of the Manage Console Switch window, but have not yet applied those changes before starting the upgrade, a warning message prompts you to confirm the upgrade because the upgrade process requires that the console switch be rebooted. If you do not apply the changes, they are discarded before upgrading the firmware.

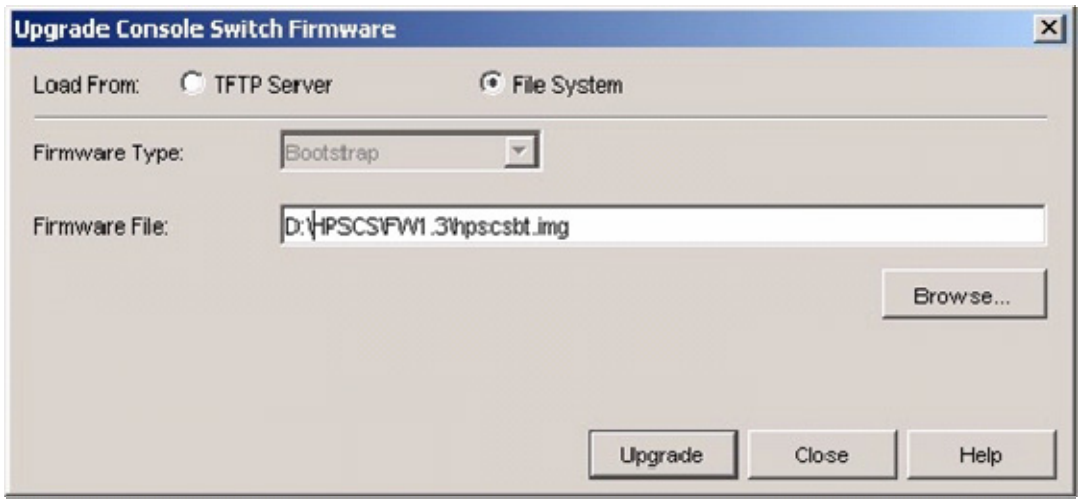
To perform TFTP downloads, TFTP must be enabled.

CAUTION: Do not power down the console switch while it is upgrading. This process can take up to 10 minutes to complete.

1. Select **Tools.**
2. Click **Upgrade Console Switch Firmware.** The Upgrade Console Switch Firmware dialog box appears.
3. Select **TFTP Server** or **File System.**

NOTE: You must upload two firmware files, bootstrap and application.

4. If you enabled File System, enter the Firmware file name, or browse for it on the file system.

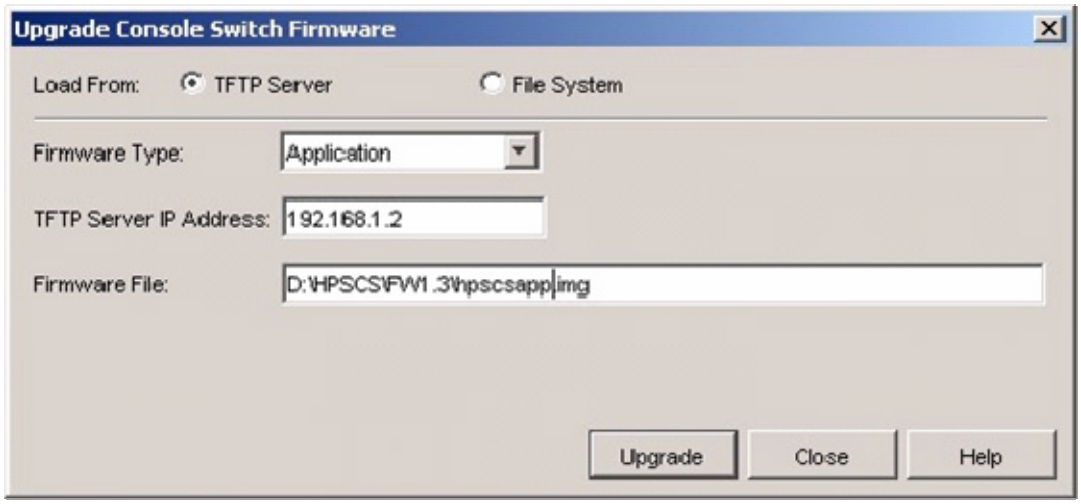


-or-

If you enabled TFTP Server:

a. Select the Firmware Type.
b. Enter the IP address in the TFTP Server IP address field.

c. Enter the Firmware File.



5. Click **Upgrade.** The Upgrade button deactivates, and a progress message appears.

   When the transfer is complete, a message prompting you to confirm a reboot appears. The new firmware is not used until the console switch reboots.

6. Click **Yes** to reboot the console switch. The Upgrade Console Switch Firmware dialog box displays a progress message, eventually indicating that the upgrade and reboot are complete. Click **Close** to exit.

   -or-

   Click **No** to reboot at a later time.

Managing serial console switch configuration files

Configuration files contain all the settings for a console switch, including network settings, SNMP settings, and attached servers. Configuration files can also be written to new console switches, avoiding the requirement to manually configure a new console switch.

NOTE: User account information is stored in the user database, not in the configuration file, except for the Override Admin account, which is stored in the configuration file and not in the user database file. For more information, see "Managing console switch user databases (on page 71)." or "Managing serial console switch user databases. ("Managing serial console switch user databases" on page 142)"

Saving a serial console switch configuration database

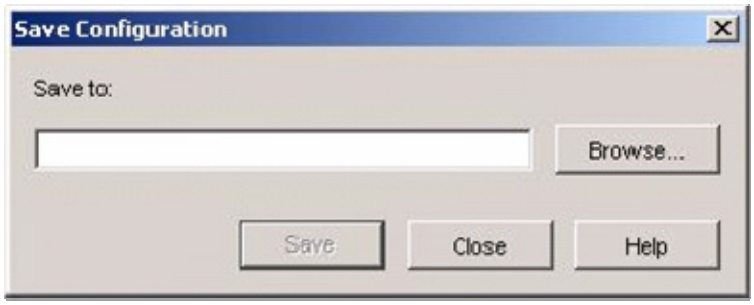
The Save Configuration tool saves the serial console switch database from the serial console switch to a file on the system running the HP IP Console Viewer.

NOTE: The file is encrypted during the save process, and you will be prompted to create a password when you save the database. You must enter this password when you restore the file.

To save a configuration from a serial console switch to a file:

1. Click **Tools.**

2. Click **Save Configuration.** The Save Configuration dialog box appears.



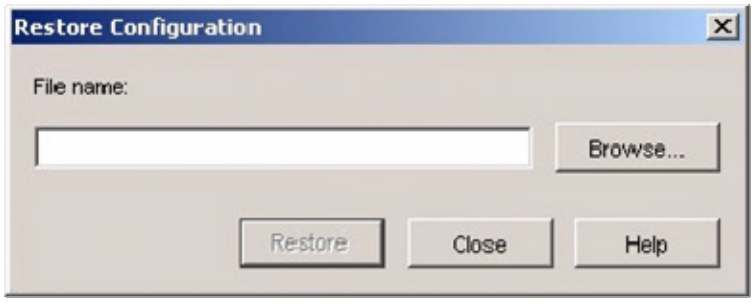
3. Click **Browse,** and select a location to save the configuration file. The location appears in the Save to: field.
4. Click **Save.** The Enter Password dialog appears.
5. Enter a password in the Password: field and re-enter it in the Verify Password: field. This password is requested when you restore this database to the serial console switch. Blank passwords are accepted but are not recommended.
6. Click **OK.** The serial console switch configuration database is read from the serial console switch and saved to a location. A progress message appears. When the save is complete, a confirmation message appears.
7. Click **OK** to return to the Tools tab.

Restoring a serial console switch configuration database

The Restore Configuration tool restores a previously saved serial console switch configuration database from the system running HP IP Console Viewer to the serial console switch. The database file can be restored to either the serial console switch from which it was saved or to another serial console switch of the same type. This eliminates the need to manually configure a new serial console switch.

To restore a configuration file to a serial console switch:

1. Click **Tools.**
2. Click **Restore Configuration.** The Restore Configuration dialog box appears.



3. Click **Browse,** and select the location of the saved configuration file. The file name and location appear in the File name: field.
4. Click **Restore.** The Enter Password dialog appears.
5. Enter the password you created when the configuration database was saved.
6. Click **OK.** The configuration file is written to the serial console switch. A progress message appears. When the restore is complete, a confirmation message appears.
7. Click **OK** to return to the Tools tab.

Managing serial console switch user databases

User database files contain all the user accounts assigned to a serial console switch, except for the Override Admin. You can save user account database files and use them to configure user accounts on multiple serial console switches by writing the user account file to the new serial console switch.

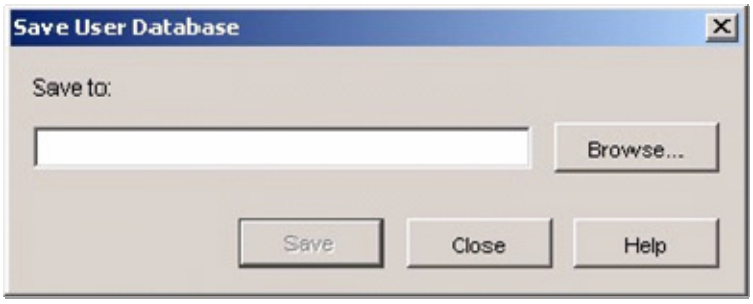
Saving a serial console switch user database

The Save User Database tool saves this user database from the serial console switch to a file on the system running HP IP Console Viewer.

NOTE: You are prompted to enter a password that will be used to encrypt the file. It does not matter if you are restoring to a different console switch or the same console switch. The password is required to read (decrypt) the file to be restored.

To save a user database from a serial console switch to a file:

1. Click **Tools.**
2. Click **Save User Database.** The Save User Database dialog box appears.



3. Click **Browse,** and select a location to save the user database file. The location appears in the Save to: field.
4. Click **Save.** The Enter Password dialog box appears.
5. Enter a password in the Password: field and re-enter it in the Verify Password: field. The configuration file is read from the serial console switch and saved in the desired location. A progress window appears. Blank passwords are accepted but not recommended.
6. Click **OK.** The user database is read from the serial console switch and saved to a location. A progress message appears. When the save is complete, a confirmation message appears.
7. Click **OK** to return to the Tools tab.

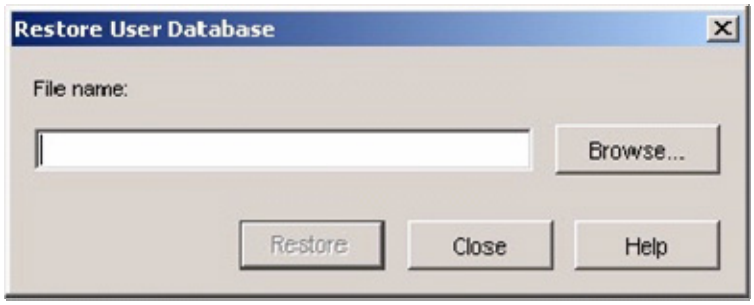
Restoring a serial console switch user database

The Restore User Database tool restores a previously saved user configuration database from the system running the HP IP Console Viewer to the serial console switch. The database file can be restored to either the serial console switch from which it was saved or to another serial console switch of the same type. This eliminates the need to manually configure users on a new serial console switch.

To restore a user database file to a serial console switch:

1. Click **Tools.**

2. Click **Restore User Database.** The Restore User Database dialog box appears.



3. Click **Browse,** and select the location of the saved user database file. The file name and location appear in the File name: field.
4. Click **Restore.** The Enter Password dialog appears.
5. Enter the password you created when the user database file was saved.
6. Click **OK.** The user database file is read from the serial console switch and saved to a location. A progress message appears. When the restore is complete, a confirmation message appears.
7. Click **OK** to return to the Tools tab.

Managing remote servers through the Serial Session Viewer

In this section

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Customizing preferences 147
Customizing session properties 148
Using login scripts 152
Using logging 156
Moving session data 159
Using macros for serial console switches 160
Grouping macros for serial console switches 161

About the Serial Session Viewer

The built-in Serial Session Viewer is a telnet client that enables you to establish serial sessions with servers attached to serial console switches. You can tailor user preferences for all sessions, as well as session properties for each server. The Serial Session Viewer offers a scripting function for automatic server login and a logging function for saving session data to a file.

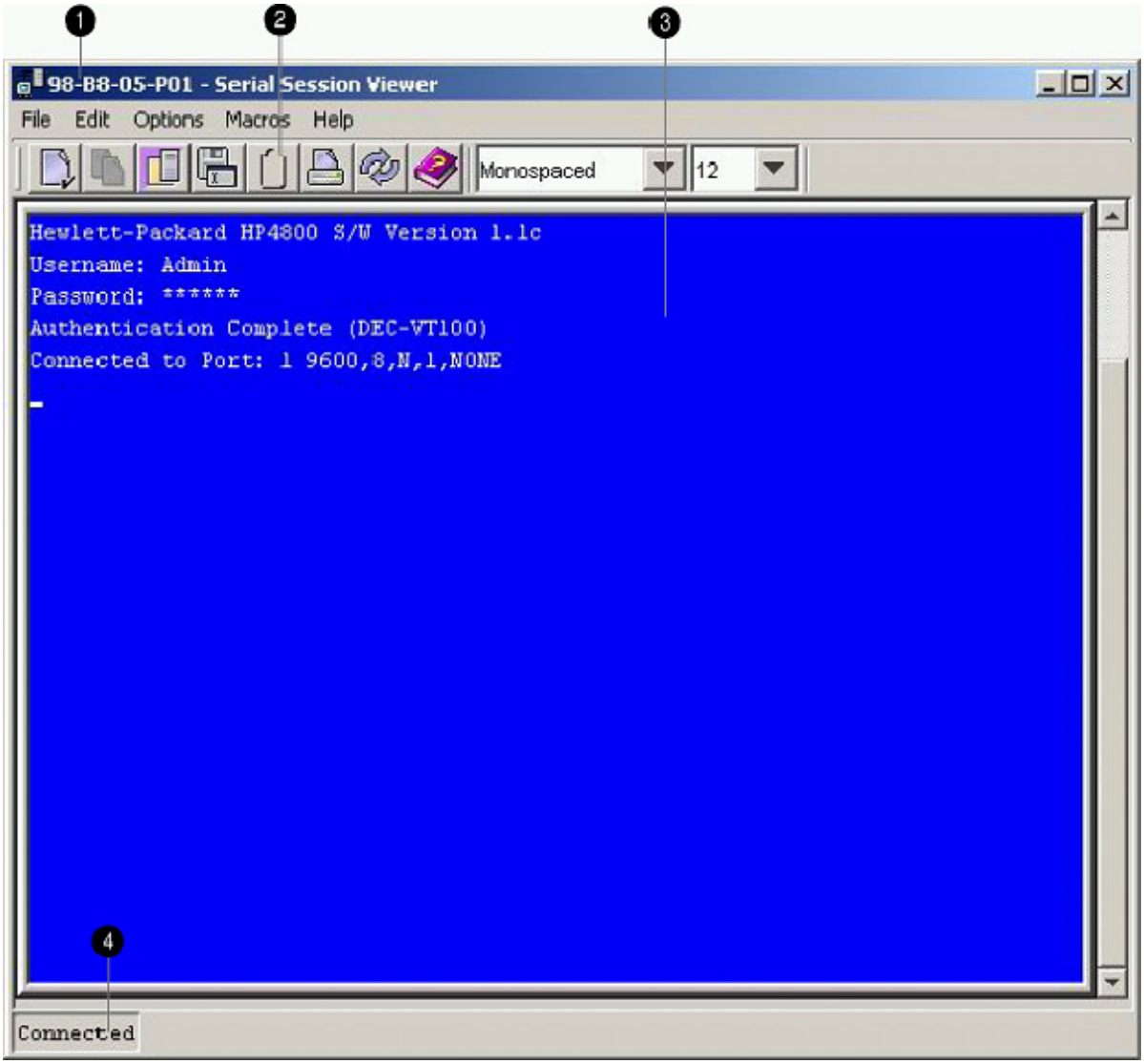
When launching a Serial Session Viewer session to a serial console switch, HP IP Console Viewer can use either an SSH or plaintext (non-encrypted) session, depending on the settings of the serial console switch. The serial console switch can be set to support SSH sessions only, plaintext sessions only, or both types of sessions at the same time.

When the serial console switch is set to support both types of sessions, the Encryption Method ("Choosing an encryption method" on page 146) dialog box appears. You can then choose a session type and optionally save your choice for use in future Serial Session Viewer sessions. SSH settings are configured in the Manage Console Switch window. For more information, see "Viewing and configuring SSH parameters for serial console switches (on page 103)."

Serial Session Viewer window

After you have connected to a server, the server command prompt appears in a separate window called the Serial Session Viewer.

From the Serial Session Viewer, you can access all the normal serial console functions of the server. You can also perform Serial Session Viewer specific tasks, such as sending macro commands to the server.



Item	Description
1	Title bar—Displays the name of the server you are viewing
2	Toolbar—Provides button equivalents to many menu commands
3	Server command prompt—Enables you to interact with the server through this command prompt
4	Status bar—Displays the current session status

About options

The Serial Session Viewer options enable you to:

- Customize global preferences for the Serial Session Viewer, that is, customize the settings that all sessions use.

- Customize individual server session properties. These settings are server-specific. They can be set differently for each server.
- Use the logging feature to save session data to a file.
- Copy, paste, and print the screen contents to and from other applications.

Accessing the Serial Session Viewer

1. Click **Servers.**
2. Double-click the server in the Unit list.

   -or-

   Select the server, and click **Launch Serial Session.**

   -or-

   Right-click the server. Select **Launch Serial Session.**

   -or-

   Select the server, and press **Enter.**

   Enable **Keep choice as default setting** if you want the selection you make to be maintained for subsequent launch requests during the current HP IP Console Viewer session.

   When this checkbox is enabled, the Encryption Method dialog box will not reappear during the current HP IP Console Viewer session unless login credentials are cleared by selecting **Tools>Clear Login Credentials** from the main window. When this checkbox is disabled, the Encryption Method dialog box appears each time the Serial Session Viewer is launched.
3. Click **Yes** to launch the Serial Session Viewer using SSH. The Serial Session Viewer launches in a new window.

   -or-

   Click **No** to launch the Serial Session Viewer in plaintext mode. The Serial Session Viewer launches in a new window.

NOTE: If this is the first unit access of the HP IP Console Viewer session, you might be prompted for a user name and password. Requests for login credentials during subsequent access attempts are affected by the credential caching settings. For more information on cached credentials, if you have not previously entered and cached successfully, refer to "Managing cached credentials (on page 33)."

Choosing an encryption method

When launching a Serial Session Viewer session to a server, the HP IP Console Viewer can use either an SSH or plaintext (non-encrypted) session, depending on the settings of the serial console switch connected to the server. The serial console switch can be set to support SSH sessions only, plaintext sessions only, or both types of sessions at the same time.

When the serial console switch is set to support both types of sessions, the Encryption Method dialog box appears. You can then use the dialog box to choose whether to use SSH and save your choice for future Serial Session Viewer sessions.

SSH settings are configured in the Manage Console Switch window. For more information, see "Configuring session parameters for serial console switches (on page 101)."

To choose an encryption method:

1. Click **Servers.**
2. Double-click the server in the Unit list.

   -or

   Select the server, and click **Launch Serial Session.**

-or-

Right-click the server. Select **Launch Serial Session.**

-or-

Select the server and press **Enter.**

If the serial console switch is configured to allow either an SSH or plaintext connection, the Encryption Method dialog box appears.

3. Click **Keep choice as default setting** to indicate that the selection you make be maintained for subsequent launch requests during the current HP IP Console Viewer session.

NOTE: The Encryption Choice dialog box might reappear on your next server access, depending on the credential caching settings. For more information, if cached credentials have been cleared, see "Managing cached credentials (on page 33)."

-or-

Continue to the next step to display the Encryption Method dialog box each time the Serial Session Viewer is launched.

4. Click **Yes** to launch the Serial Session Viewer using SSH.

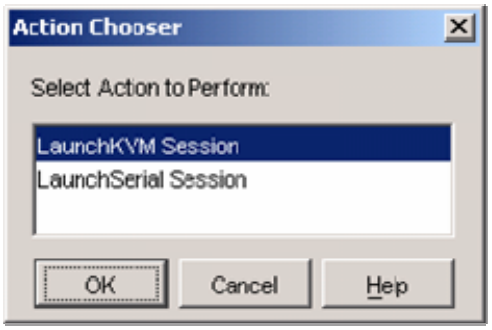
-or-

Click **No** to launch the Serial Session Viewer using no encryption.

Selecting an action

If the HP IP Console Viewer receives more than one primary action for a selected unit, because it has more than one connection type, the Action Chooser dialog box appears and prompts you to select a single action from the list of possible actions to perform.

To select an action, highlight it and click **OK.**



Closing the Serial Session Viewer

To close a Serial Session Viewer, select **File>Exit.**

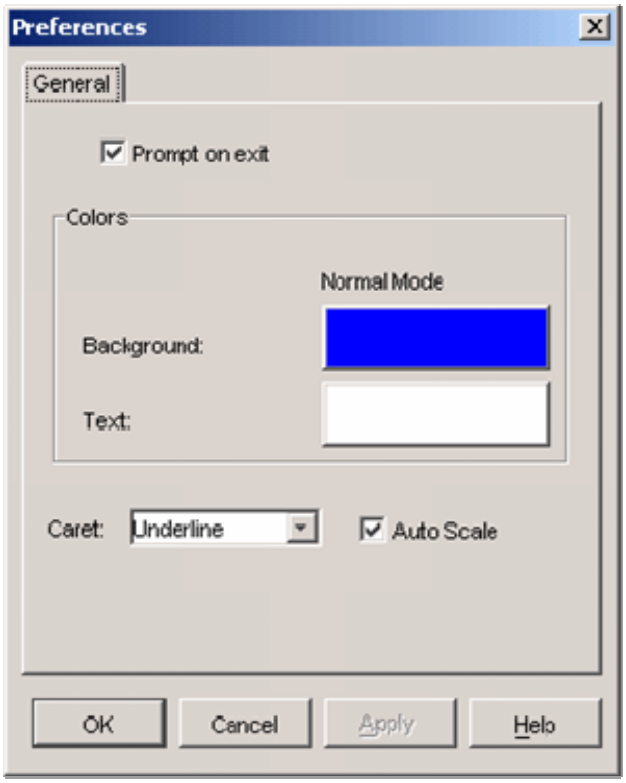
Customizing preferences

Preferences are used for all sessions. There are three types of preferences:

- Prompt on exit—When the exit warning prompt is enabled, a message appears when you try to exit the session. You can then choose to exit or continue the session. When disabled, the session closes without confirmation.
- Colors—The Colors preferences specify the background and text colors for the virtual terminal window during normal session operations (normal mode).
- Caret—The Caret preference indicates whether the cursor appears as an underline or as a block.

To customize preferences:

1. Select **Options>Preferences.** The Preferences dialog box appears.



2. Select or clear the **Prompt on exit** checkbox to indicate if users should be prompted to verify a request to exit the session. The default is enabled.
3. To change the background and text colors for the virtual terminal window during normal session operations:
   a. Click **Background** or **Normal Mode,** and select a color. The default value is blue.
   b. Click **Text** or **Normal Mode,** and select a color. The default value is white.
4. Click **OK** to save the changes and exit the dialog box.

   -or-

   Click **Cancel** to exit without saving any changes.

Customizing session properties

Session properties are set on a per-server basis.

There are three session properties tabs:

- Terminal session properties (on page 148)
- Login scripts session properties (on page 151)
- Logging session properties (on page 152)

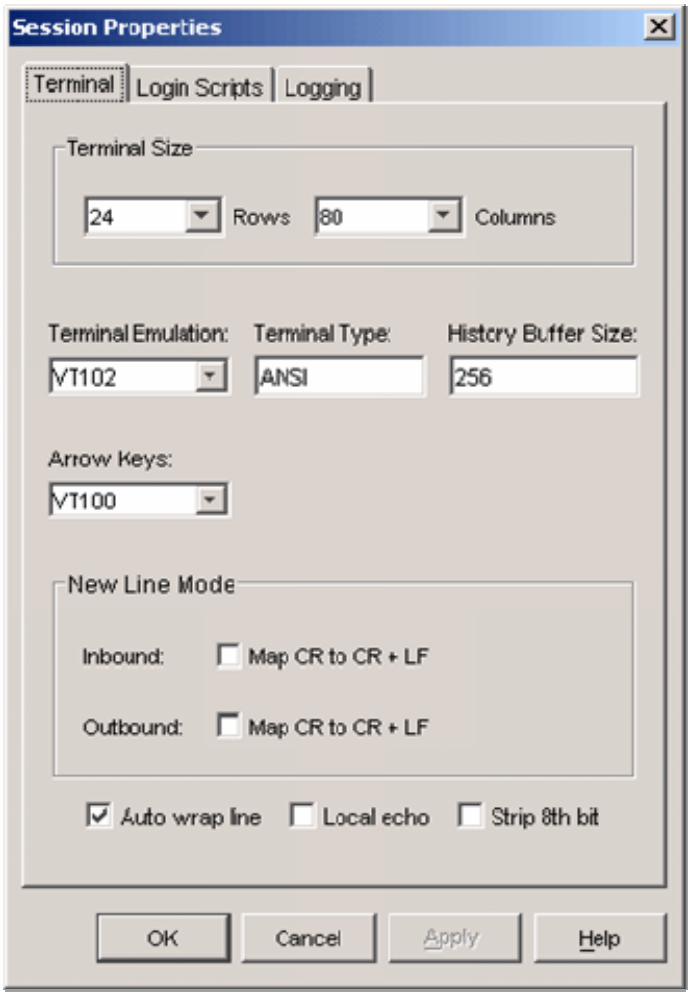
Terminal session properties

Terminal properties include:

- Virtual terminal window size.

- Terminal emulation type: ASCII, VT52, VT100, VT100+, VT102, VT220 or VT320. For more information, see "Serial Session Viewer Terminal emulation modes (on page 238)" for lists of the supported terminal emulation control characters and byte sequences for each emulation type.
- The terminal type used during telnet session negotiation.
- Sequences to send for each of the Arrow keys.
- New line mode. This property enables or disables the automatic insertion of a line after each line of data. This is useful when connecting to servers that do not insert a carriage return in incoming or outgoing data, and it prevents overwriting data when a new line is received.
- Auto line wrap. This property enables or disables wrapping characters onto the next line when a new character is received and the cursor is at the end of the line. When disabled, new characters overwrite the last character on the line when the cursor is at the end of the line.
- Local echo. This property enables or disables the repeating of typed text. When you are connected to a device that does not repeat or echo the data you type, enabling local echo displays the typed text. However, if your server echoes data, enabling local echo will cause all typed data to appear twice.
- Strip 8th bit. This property enables or disables 7-bit ASCII. When enabled and you are connected to a server that requires 7-bit ASCII transmission, the eighth bit of every character sent and received will be stripped.
- History buffer size. This property specifies the maximum number of lines that the history buffer can hold.

- Macro group. This option specifies the macro group to be used during a server session. The macros in the specified group appear in the Macro menu. For more information, see "Using macros for serial console switches (on page 160)."



Customizing terminal session properties

1. Select **Options>Sessions.**

   -or-

   Click **Session Settings.**
2. Select **Terminal.**
3. Select the number of rows and columns in the Rows and Columns dropdown lists. The default value is 24 rows and 80 columns.
4. From the Terminal Emulation dropdown list, select **ASCII, VT52, VT100, VT100+, VT102, VT220,** or **VT320.** The default value is VT102.
5. The value in the Terminal Type field must exactly match what the telnet server expects of the unit. For more information on requirements, see the documentation included with the serial console switch. The default value is ANSI.
6. From the Arrow Keys dropdown list, select **VT100** or **ANSI.** (This field is valid only if the terminal emulation is not ASCII.) The default value is VT100.
7. From the Macro Group dropdown list, select a group name or **All.** The default value is All (all macros will be available).

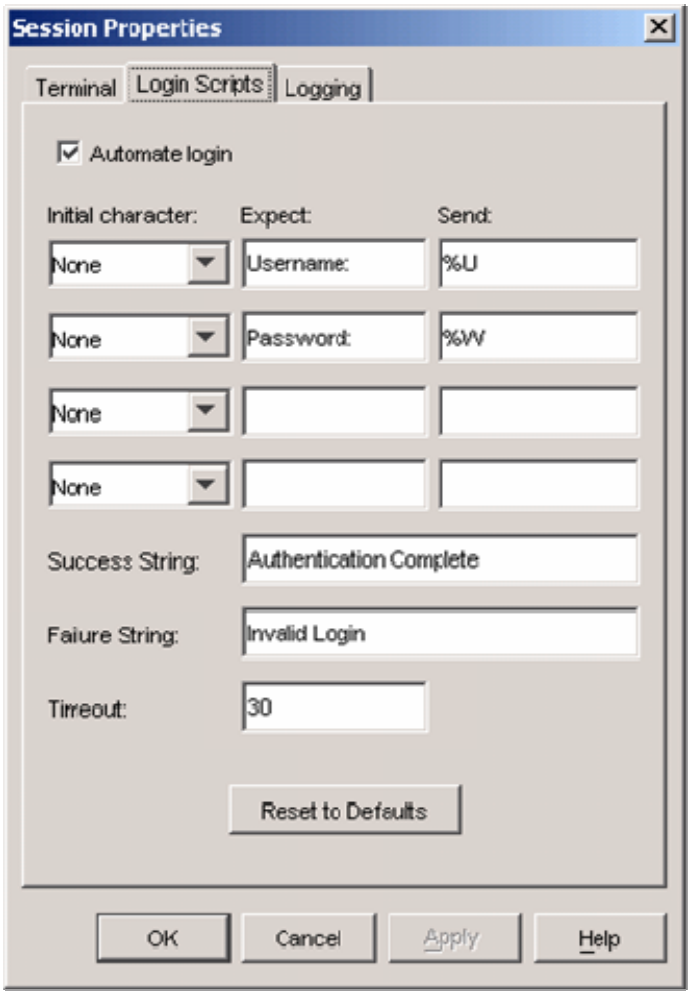
8. Select or clear the **New Line Mode>Inbound** option. When enabled, an inbound carriage return from the server is treated as if both a carriage return and a linefeed were received. When disabled, a linefeed is not added to an inbound carriage return. The default value is disabled.
9. Select or clear the **New Line Mode>Outbound** option. When enabled, an outbound carriage return to the server is always followed by a linefeed character. When disabled, a linefeed is not sent with a carriage return. The default value is disabled.
10. Select or clear **Auto Wrap Line** option. The default value is enabled.
11. Select or clear **Local Echo** option. When enabled, typed characters are echoed to the virtual terminal window. When disabled, they are not. The default value is disabled.
12. Select or clear **Strip 8th bit** option. When enabled, the eighth bit of every character sent and received is stripped. When disabled, it is not. The default value is disabled.
13. Click **OK** to exit the dialog box and save any changes.

    -or-

    Click **Cancel** to exit the dialog box without saving any changes.

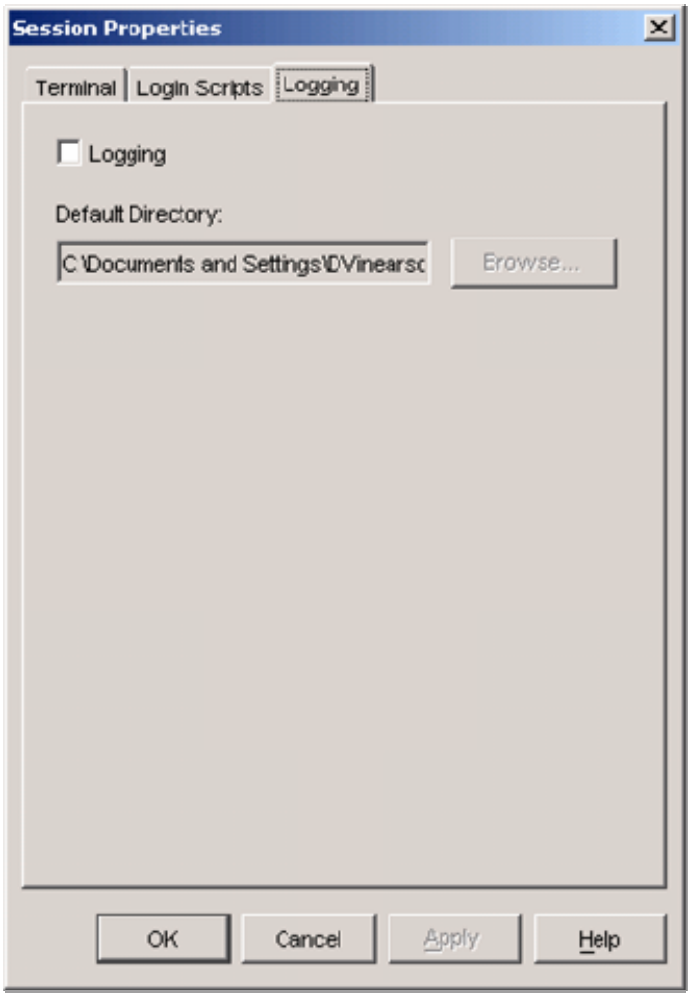
Login scripts session properties

The Login Scripts tab contains the dialog box for enabling or disabling and editing automatic login scripts. For more information, see "Using login scripts (on page 152)."



Logging session properties

The Logging tab enables or disables automatic logging during the next server session. For more information, see "Using logging (on page 156)."



Using login scripts

The Serial Session Viewer has a login script function that enables you to automatically log in to a server. A login script contains a sequence of Expect and Send strings and initial transmission characters that work with them. The definition of a login script can also contain the strings that indicate a successful and a failed login.

To use a login script, you must enable **Automatic Login** in Session Properties dialog box (the default value is enabled) of the server.

The HP IP Console Viewer contains a default login script for supported console switches. When a Serial Session Viewer telnet session is initiated to a supported unit, the default login script is run automatically. If the login is successful (that is, the string defined to indicate success is received), the session continues. If the login is not successful (that is, the string defined to indicate failure is received), the user is prompted for login credentials.

You can use the default login script, customize the default login script or create an entirely different login script. If you customize the default login script and later decide to return to the original, you can easily restore the default script content.

When you build the login script, you specify the Initial Character to be sent to the unit as soon as the telnet session is established. The first Expect string indicates what the unit will send as its first prompt. The first Send string indicates what the login script will send to the unit after it receives the first Expect string.

You can build additional Expect and Send strings according to what the particular server will prompt for and what will be sent in response.

Changing a default login script

You can change a default login script of a server in the Session Properties dialog box. When you select the Login Scripts tab, all the information from the current login script appears, including the Initial Character to be transmitted, the Send and Expect strings, the string that indicates success and the string that indicates failure.

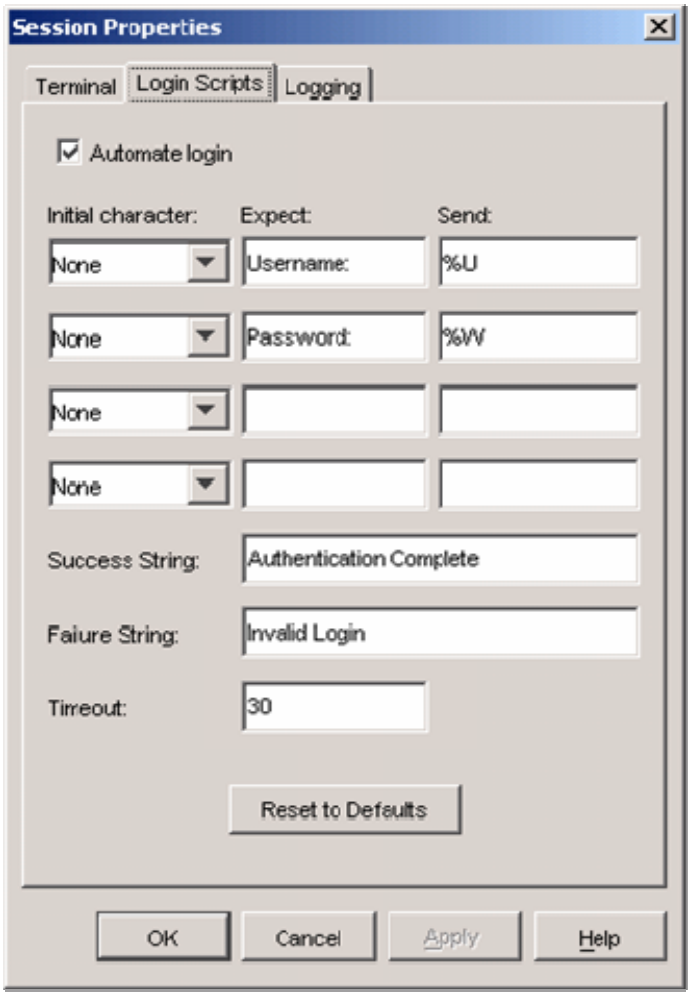
You can change the content of the existing fields, and you can add additional Send and Expect strings, up to the maximum allowed.

When a login script needs debugging, you can enable a property or option in the main menu that opens the Serial Session Viewer before any login to the server is attempted. After the login script is successfully debugged, you can disable this feature, and the Telnet window appears only after a successful login.

1. Select **Options>Sessions.**

   -or-

   Click **Session Settings.**
2. Click **Login Scripts.**



3. In the Default Login Timeout field, enter the number of seconds the Serial Session Viewer waits for a valid response to automatic login information, in the range 1 to 99999. The default value is 30 seconds.
4. In the Initial character dropdown list, select: CR (carriage return), CR+LF (carriage return and linefeed), CR+CR (carriage return and carriage return), ESC (Escape), CTRL+P (Control+P sequence, 0x10 in hex), or None (no initial transmission character). The default value is None.
5. In the first Expect field, enter the 1 to 32 alphanumeric character string that you expect from the unit. Spaces are allowed. The Manage Console Switch Default Values lists the serial console switch default values.
6. In the first Send field, enter the 0 to 32 alphanumeric character string to be sent in response to the Expect string. Spaces are allowed, and a blank field is valid. A CR or CR+LF is appended to the string, based on the New Line Mode - Outbound setting. If a Send field contains an entry, the Expect field cannot be blank. The Manage Console Switch Default Values lists the serial console switch default values.

   You can use the following macros in the field. The HP IP Console Viewer automatically replaces these variables when the login script runs.

   Macro are replaced with:

   - %U user name
   - %W Password
7. Enter additional Expect and Send field entries, as needed, to a maximum of four each.
8. In the Success String field, enter the string that indicates the login was successful. This field must contain a value when automatic login is enabled.
9. In the Failure String field, enter the string that indicates the login was unsuccessful. This field must contain a value when automatic login is enabled.
10. Select or clear the **Press the Reset to Default button** checkbox to reset the login script to its default content. The default values are restored and displayed.
11. Click **OK** to exit the dialog box and save any changes.

    -or-

    Click **Cancel** to exit the dialog box without saving any changes.

Field	Default value
Initial character	None
First expect	user name:
First send	%U
Second expect	Password:
Second send	%W
Success string	Authentication complete
Failure string	Invalid login

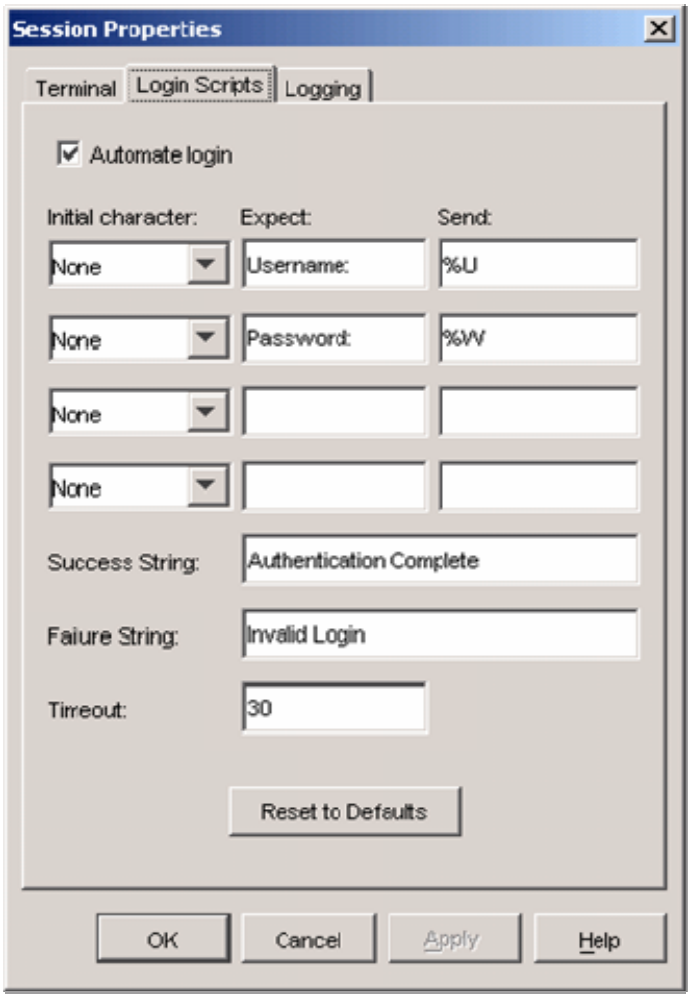
Enabling or disabling automatic login

1. Select **Options>Sessions.**

   -or-

   Click **Session Settings.**

2. Click **Login Scripts.**



3. Select or clear the **Automate Login** checkbox. The default value is enabled. When automatic login is enabled, the login script must contain Success and Failure strings.
4. Click **OK** to exit the dialog box and save any changes.

   -or-

   Click **Cancel** to exit the dialog box without saving any changes.

Enabling or disabling debug mode for login scripts

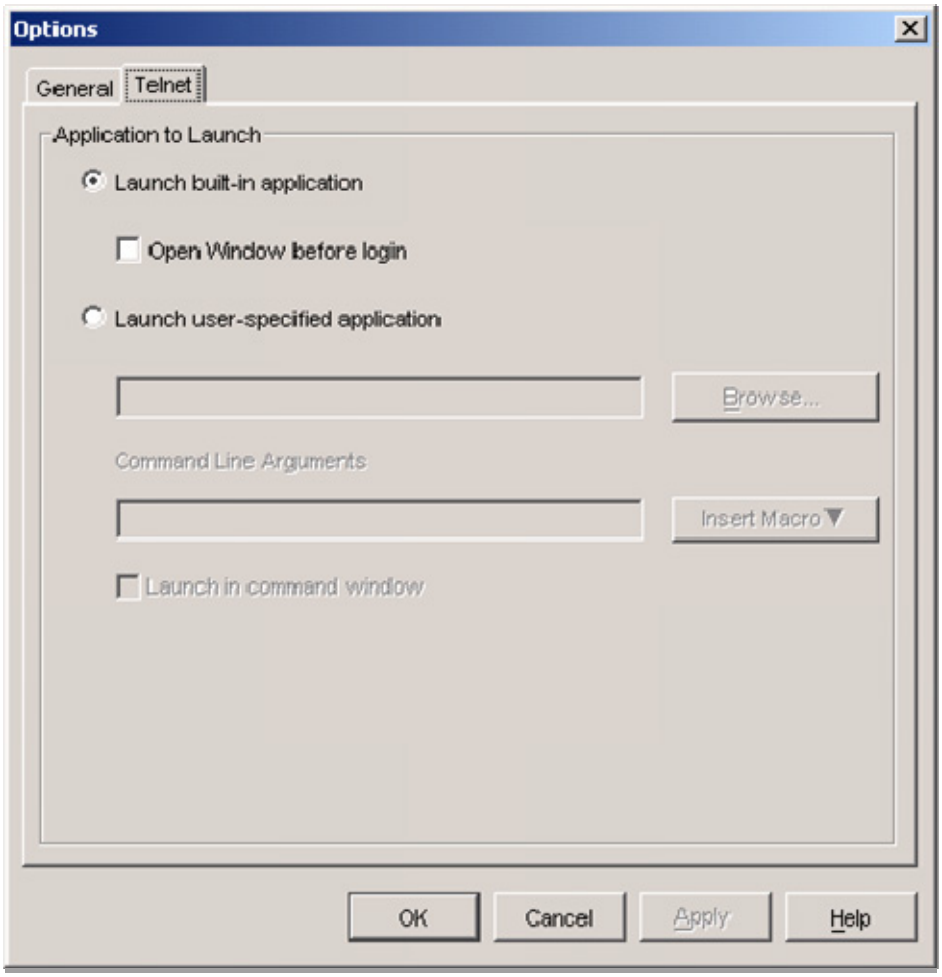
You can enable or disable debug mode for login scripts in the main window options or in the properties of a server.

1. To access the enable or disable debug mode option, select **Tools>Options.**

   -or-

   To access the enable or disable debug mode property, select a serial console switch or server and do one of the following, select **View>Properties,** click **Properties,** or right-click the unit. Select **Properties.** The Properties dialog box appears.

2. Click **Telnet.**



3. Select or clear the **Open Window before login** checkbox. When enabled, the Serial Session Viewer window appears before login is attempted. When disabled, the Serial Session Viewer window appears only after a successful login.
4. Click **OK** to save the new setting.

   -or-

   Click **Cancel** to exit without saving the new setting.

Using logging

The Serial Session Viewer has a logging function that saves the contents of a session to a file. You can enable automatic logging or dynamically start logging at any time. Additionally, you can pause, resume, and stop logging, regardless of whether it was started automatically or dynamically.

While logging is occurring or when it is paused, the status bar at the bottom of the Serial Session Viewer window contains a logging status label.

NOTE: When you select or clear automatic logging, the logging begins or ends at the start of the next Serial Session Viewer session to that unit. If you change the default log file directory used for automatic logging, the change does not take effect until the next session to that unit.

The format of log file names is shown as follows, where <mmddyy> represents the month, day and year, and <hhmmss> represents the current hour, minute, and second in military time.

scvTelnet<mmddyy>_<hhmmss>.log

The default log directory is session-specific. Each Serial Session Viewer session can have its own location for storing log files. You can change the name of the file and the location of the directory that stores the log files. By default, logs are created in the "IPViewer\logs" directory under your home directory.

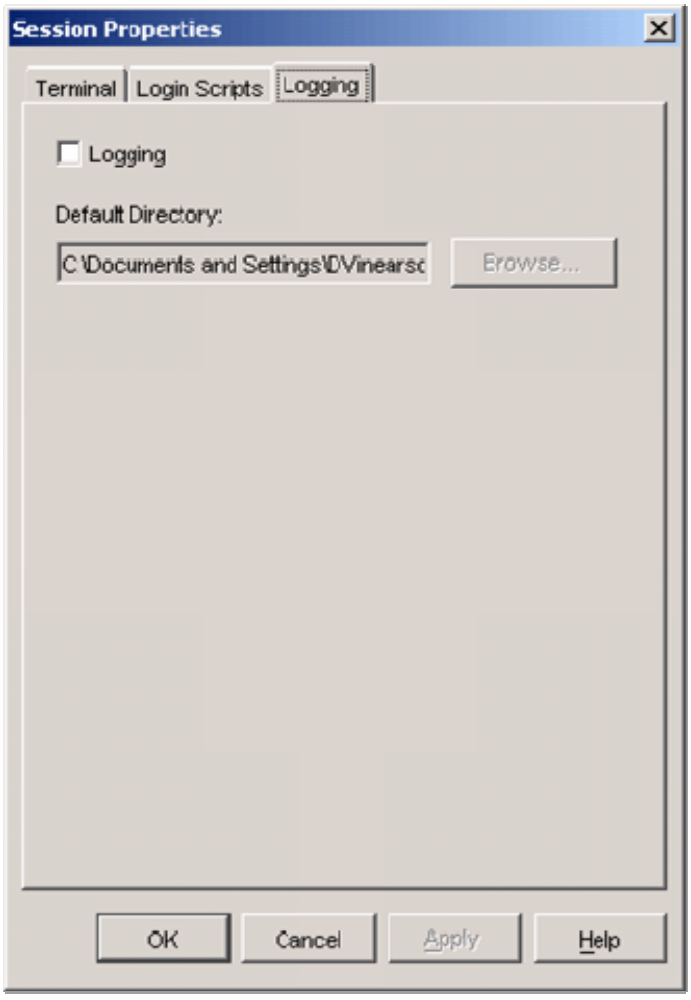
You can view a log file at any time, using a standard text editor. The screen buffer is written to the log file when the buffer is full or when logging is paused or stopped. To ensure the log file is up-to-date, either pause or stop the logging.

Enable or disabling automatic logging

1. Select **Options>Session Properties** from the Serial Session Viewer.

   -or-

   Click **Session Settings.**
2. Click **Logging.**



3. Select or clear the **Logging** checkbox. The default value is disabled.

   When you enable logging, the Default Directory field displays the current default location for log files. If that is the desired directory, click **OK.** To change the default log file directory, see "Changing the default log file directory (on page 158)."

   Automatic logging will start or stop when you initiate the next Serial Session Viewer session to that server. When logging starts, the logging status label will indicate Logging.

Changing the default log file directory

1. Select **Options>Session Properties** from the Serial Session Viewer.

   -or-

   Select **Session Settings.**
2. Click **Logging.** The Default Directory field displays the current default location for log files.
3. Click the **Browse.** The Set Directory dialog box appears.
4. Select a directory from the Look in list box.

   -or-

   Create a new directory:

   a. Click **Create New Folder.** A new directory named New Folder appears in the directory list.

   b. Select the New Folder entry in the directory list to highlight it. Then, click the entry again to edit its name. Enter in a new name. Press **Enter.** The directory appears in alphabetical order in the directory list.

   c. Select the newly created directory in the directory list. The File name field will now contain the name of the new directory.
5. Click **Set Directory** to select the newly created or selected directory as the default log file directory. The Set Directory dialog box closes. The Default Directory field now contains the name of the newly created or selected directory.
6. Click **OK** to save the new information.

   -or-

   Click **Cancel** to exit the dialog box without saving any new information.

Starting dynamic logging

1. Select **Options>Logging>Start** from the Serial Session Viewer. The Log dialog box appears.

   The Look in list box contains the default log file directory, and the File name field contains the default log file name. HP recommends using this file name format. However, you can change it for the duration of this session. If you choose to use the default log file name, proceed to step 3.
2. To change the default log file name for the duration of the dynamic logging session, select a directory from the Look in dropdown list. The directory list might contain directories and files. To create a new directory:

   a. Click **Create New Folder.** A new directory named New Folder appears in the directory list.

   b. Select the **New Folder** entry in the directory list to highlight it. Then click the entry again to edit its name. Enter a new name. Press **Enter.** The directory appears in alphabetical order in the directory list.

   c. Double-click the newly created directory in the directory list. The File name field now contains the name of the new directory.

   d. Enter a new file name in the File name field. If you enter a file name that already exists, the new file overwrites the old file.
3. Click **Log** to confirm the directory selection and begin logging.

   -or-

   Click **Cancel** to exit the dialog box and cancel the request to start logging.

   When logging begins, the logging status label indicates Logging.

Pausing logging

Select **Options>Logging>Pause** from the Serial Session Viewer. The logging status label indicates Logging Paused.

Resuming logging

Select **Options>Logging>Resume** from the Serial Session Viewer. The logging status label indicates Logging.

Stopping logging

Select **Options>Logging>Stop** from the Serial Session Viewer. The logging status label disappears.

Moving session data

During a Serial Session Viewer session, you can:

- Highlight session data and copy it to the system clipboard
- Copy a screen of session data to the system clipboard
- Copy the entire history buffer contents to the system clipboard
- Paste the contents of the system clipboard into a session
- Print a screen of session data

Information that is copied from a session can be pasted in other applications. Similarly, information copied from other applications can be pasted into a Serial Session Viewer session.

NOTE: Only textual (ASCII) data can be copied and pasted.

Copying a session data

There are three ways to copy data to the clipboard:

- Highlight session data to be copied and press **Copy Text** in the toolbar or the Edit>Copy Text menu.
- Copy the visible session screen contents by pressing **Copy Screen** in the toolbar or the Edit>Copy Screen menu.
- Copy the entire session buffer by pressing **Copy Buffer** in the toolbar or the Edit>Copy Buffer menu.

The copied data is saved to the system clipboard. You can then paste the clipboard contents into this or another application.

Pasting system clipboard contents

1. Place textual data on the system clipboard, using a text editor or other application.
2. Initiate a Serial Session Viewer session.
3. At the point where the clipboard contents should be pasted, select **Options>Edit>Paste** from the Serial Session Viewer.

   -or-

   Click **Paste.**

Printing a session screen

Select **Options>File>Print Screen** from the Serial Session Viewer.

-or-

Click **Print Screen.**

The operating system's print dialog box appears. Make the appropriate settings. The screen contents are then sent to the printer.

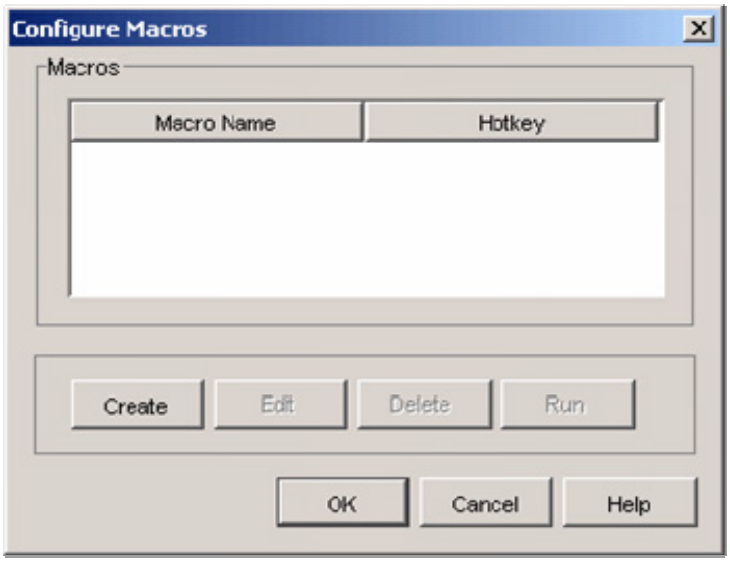
Using macros for serial console switches

The Serial Session Viewer macro function enables you to:

- Send multiple keystrokes to a server, including keystrokes that you cannot generate without affecting your local system, such as Ctrl+Alt+Delete.
- Create, edit, and delete macros. You can also define a hotkey for a macro that, when entered, will run the macro. This is an alternative to using a menu selection to run the macro.
- Create, edit, and delete macro groups. For more information, see "Grouping macros for serial console switches (on page 161)."
- Change the macro group that appears in the Macros menu. This causes the macros in the specified group to be available in that menu. Alternatively, you can specify that all defined macros be available, rather than just those in one group.

To create or edit a macro:

1. Select **Macros>Configure.** The Configure Macros dialog box appears.



2. To create a macro, click **Create.**

   -or-

   To edit a macro, click **Edit.** The Create Macro or Edit Macro dialog box appears.
3. If you are creating a macro, enter a 1 to 32 character name in the Name field.
4. Select a from the **Key** dropdown menu to define a hotkey for the macro.
5. Enable **Control, Shift,** or **Alt** to add a modifier to the hotkey.

6. By default, the Include in Menu checkbox is disabled, indicating the macro will not appear in the Macros menu (it appears only if this checkbox is enabled, and if it is a member of the macro group that is selected for inclusion in the menu).

   To exclude the macro from the Macros menu, disable this checkbox. In this case, if the macro's definition includes a hotkey, you will still be able to use the hotkey to run the macro, even if the macro's name does not appear in the Macros menu.

   In the Enter Keystrokes field, enter the macro string. You can include the following special control characters:

   \n = Newline \b = Backspace

   \r = Carriage return \d = Delay character (500 milliseconds)

   \f = Form feed \0x?? = ?? is hexadecimal value

   \t = Horizontal tab 0??? = ??? is octal value

   You can also insert a telnet break sequence by selecting **Send Telnet Break** from the Control Code dropdown list next to the Enter Keystrokes field.
7. Click **OK** to save the new information and return to the Configure Macros dialog box. The newly created macro appears in the Defined Macros list.

   -or-

   Click **Cancel** to return to the Configure Macros dialog box without saving any changes.
8. Click **Close.**

To delete a macro:

1. Select **Macros>Configure.** The Configure Macros dialog box appears.
2. Select the macro from the Defined Macros list.
3. Click **Delete.** You are prompted to confirm the deletion.
4. Click **Yes** to confirm.

   -or-

   Click **No** to cancel the deletion. You are returned to the Configure Macros dialog box.
5. Click **Close.**

Grouping macros for serial console switches

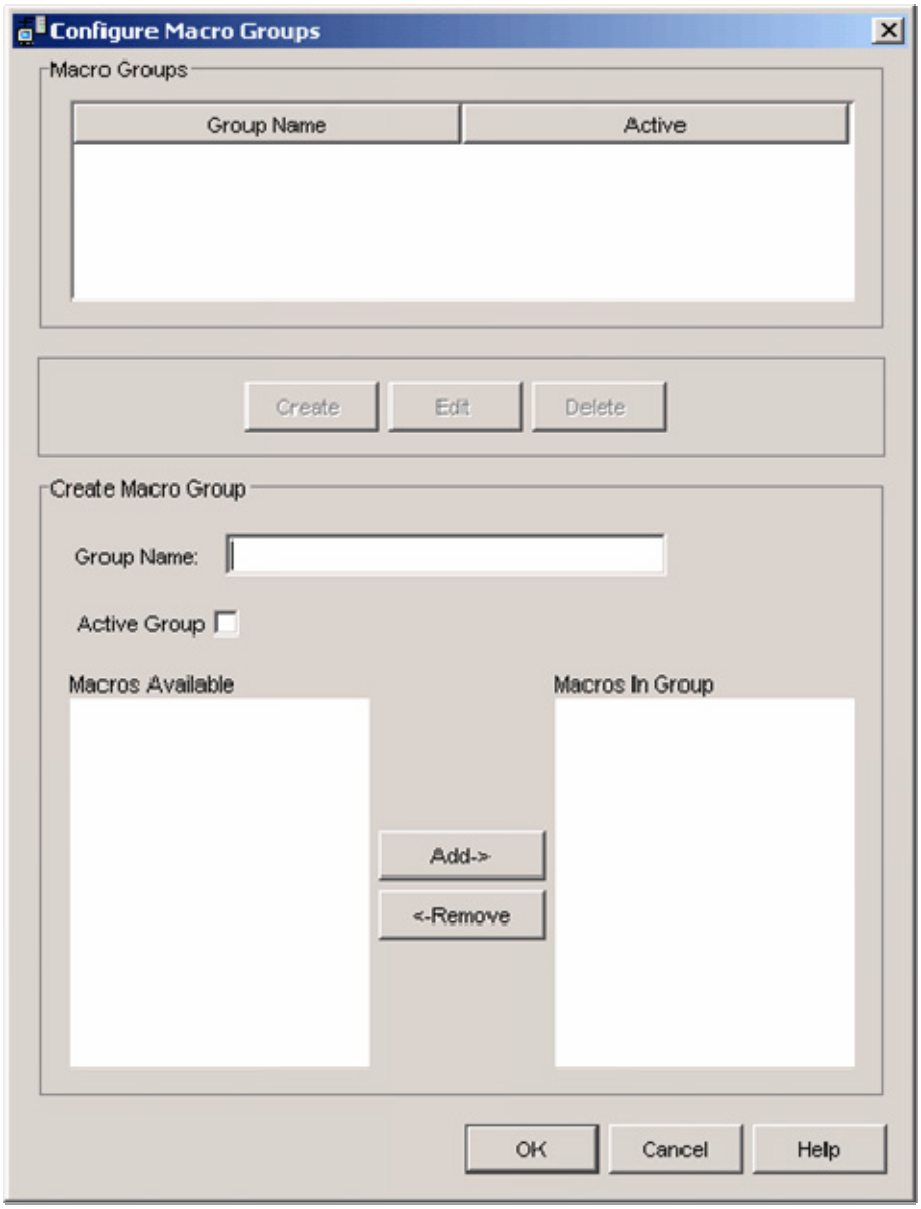
The Configure Macro Groups dialog box enables you to group macros into logical groups. The groups can be altered or you can create an entirely new group. You can also rename and delete groups that have been previously created.

Macro group settings are server-specific. They can be set differently for each server. Macros in the selected group appear in the Macros menu.

If the definition of a macro has the Include in Menu checkbox disabled, that macro does not appear in the menu, even if belongs to an enabled group. However, if the definition of a macro includes a hotkey, it can be used to run the macro.

To create a macro group:

1. Select **Macros>Configure Macro Groups.**



2. Click **Create.** The Configure Macro Groups dialog box appears.
3. In the Create Macro Group panel, click **Create.**
4. Position the cursor in the Group Name field, and enter the new group name. Duplicate macro group names are not allowed.
5. Press **Enter.**
6. Select one or more macros to include in this group from the Macros Available list and press **Add.**
7. Select one or more macros in the Macros In Group list to remove and press **Remove.**
8. Select the **Active Group** checkbox to have the macros in this group appear in the Macros menu. Only macros that have been individually enabled to be included in the menu display. For more information, see "Using macros for serial console switches (on page 160)."
9. Click **OK** to save the new information and return to the Configure Macro Groups dialog box.

   -or-

   Click **Cancel** to return to the Configure Macros Groups dialog box without saving any changes.

10. Click **Close.**

To delete a macro group:

1. Select **Macros>Configure Macro Groups.** The Create Macro dialog box appears.
2. In the Configure Macro Groups panel, select the macro group name in the Group Name column. To select multiple macro group names, press the **Shift** or **Ctrl** key while clicking.
3. Click **Delete.** You are prompted to confirm the deletion.
4. Click **Yes** to confirm or **No** to cancel the deletion. You are returned to the Configure Macro Groups dialog box.
5. Click **Close.**

Organizing the system

In this section

Customizing console switch and server properties 164
Customizing options 174
Assigning units to sites, departments, locations, or folders 177
Deleting and renaming a unit 178
Managing local databases 179

Customizing console switch and server properties

Individual console switch and server properties can be altered by selecting a console switch or server from the selected view and selecting the Properties dialog box.

The KVM console switch Properties dialog box contains the following:

- General tab (on page 164)
- Network tab (on page 169)
- Information tab (on page 171)

The serial console switch Properties dialog box contains the following:

- General tab (on page 164)
- Network tab (on page 169)
- Information tab (on page 171)
- Telnet tab (on page 166)

The server Properties dialog box for contains the following:

- General tab (on page 164)
- iLO tab (on page 171)
- Information tab (on page 171)
- Connections tab (on page 173)
- Telnet tab (on page 166)

General tab

The General tab enables you to specify a unit's name, Type (server only), icon, Site, Department and Location.

1. Select an individual unit from the selected view.
2. Select **View>Properties** from the menu bar. The General tab appears.

   -or-

   Click **Properties.** The General tab appears.

   -or-

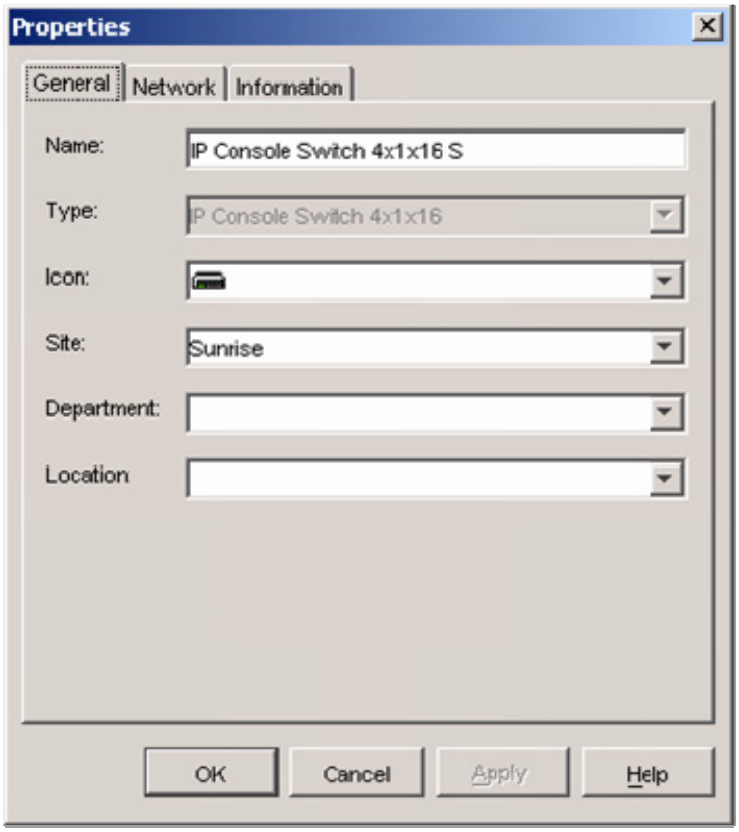
   Highlight and right-click the unit, and select **Properties.** The General tab appears

3. (Optional for servers only) Select the server type (user definable). If the selection is not in the dropdown list, enter the name of the new type.
4. (Optional) Select the icon to display for the unit.
5. (Optional) Select the site, department, and location. If the selection is not in the dropdown list, enter the name of the new assignment.
6. Click **Apply>OK** to save the new settings.

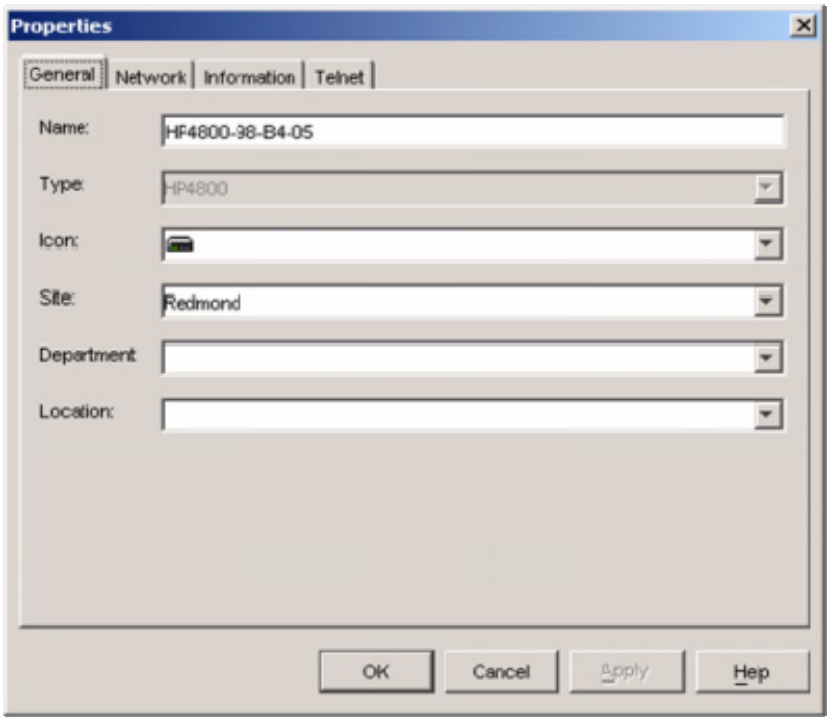
   -or-

   Click **Cancel** to exit.

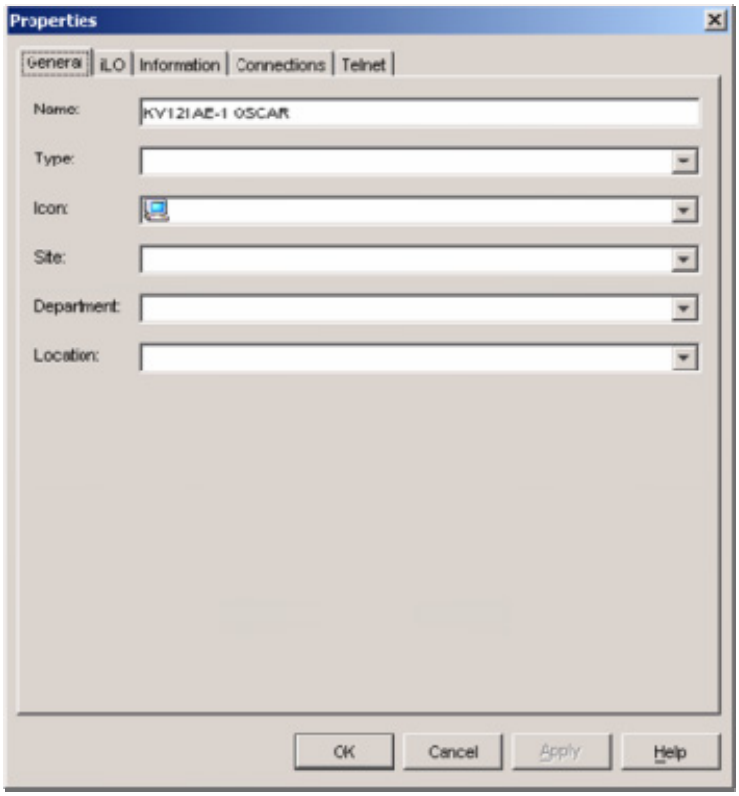
KVM console switch General tab



Serial console switch General tab



Server General tab



Telnet tab

The serial console switch and server Telnet tabs enable you to view and change Telnet properties and options.

Telnet properties include the IP address (for servers only) and the port number to connect to when establishing a telnet session to the unit. You can designate the built-in Serial Session Viewer as the telnet client or you can specify another telnet application. When you specify the built-in application, you can choose to open the window before login to troubleshoot login scripts. For more information, see "Using login scripts (on page 152)."

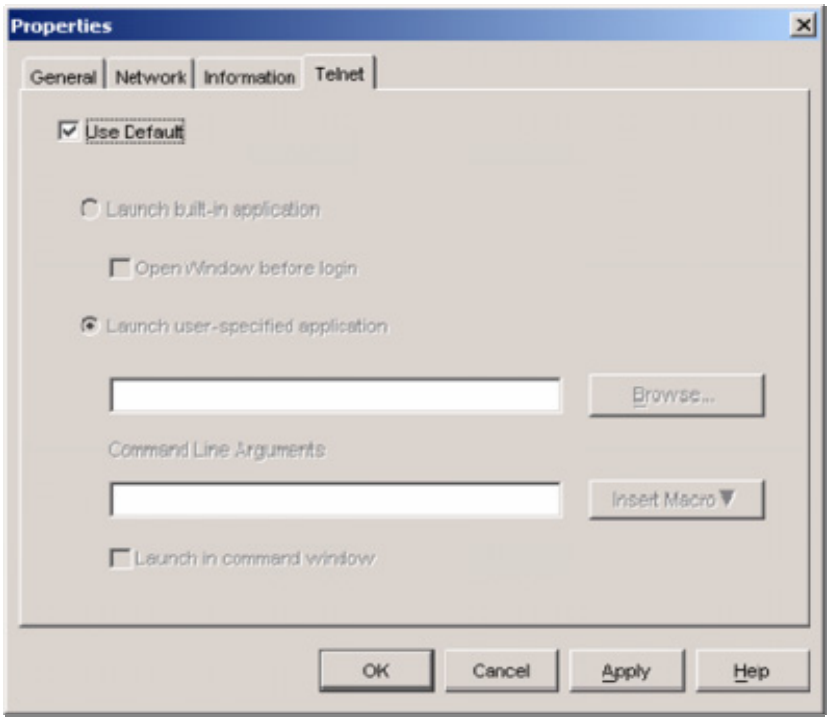
When you indicate a user-specified telnet application, you can include its command line arguments. A selection of macros is available for placement in the command line. This can be useful for automatic replacement of variables such as IP address, port number, user name and password. For telnet commands that do not provide their own GUI, such as those for standard Windows®, Linux, and UNIX®, you can have the telnet application launched from within an operating system command window.

Serial console switch Telnet tab

The Tools>Options Telnet tab enables you to configure the global system settings for Telnet. These settings can be overridden by individual console switch or server Telnet settings.

You can globally designate the built-in Serial Session Viewer as the telnet client, or you can specify another telnet application. When you specify the built-in application, you can choose to open the window before login to troubleshoot login scripts. For more information, see "Using login scripts (on page 152)."

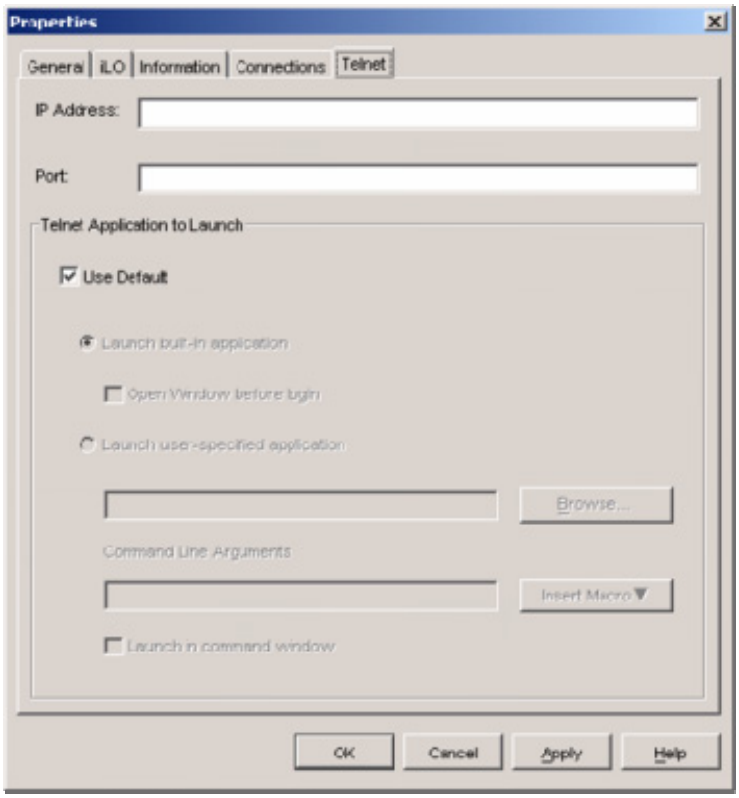
When you indicate a user-specified telnet application, you can include its command line arguments. A selection of macros is available for placement in the command line. This can be useful for automatic replacement of variables such as IP address, port number, user name and password. For telnet commands that do not provide their own GUI, such as those for standard Windows®, Linux, and UNIX®, you can have the telnet application launch from within an operating system command window.



Server Telnet tab

Telnet properties include the IP address (for servers only) and the port number to connect to when establishing a telnet session to the unit. You can designate the built-in Serial Session Viewer as the telnet client or you can specify another telnet application. When you specify the built-in application, you can choose to open the window before login to troubleshoot login scripts.

When you indicate a user-specified telnet application, you can include its command line arguments. A selection of macros is available for placement in the command line. This might be useful for automatic replacement of variables such as IP address, port number, user name, and password. For telnet commands that do not provide their own GUI, such as those for standard Windows®, Linux, and UNIX®, you can have the telnet application launched from within an operating systems command window.



Viewing and changing telnet options

1. Select an individual unit from the selected view.
2. Select **View>Properties** from the menu bar. The General tab appears.

   -or-

   Click **Properties.** The General tab appears.

   -or-

   Highlight and right-click the unit, and select **Properties.** The General tab appears.
3. Click **Telnet.**
4. For servers only, in the IP Address field, enter an IP address in dot notation or a 1 to 128-character domain name. Spaces are not allowed. Duplicate addresses are allowed.
5. For servers only, in the Port field, enter a port number in the range 23 to 65535. If the field is left blank, port 23 is used. For serial console switches, the console switch's IP address is used along with default CLI telnet port 23.
6. Select or clear the **Use Default** option. When enabled, the default global settings specified in Options will be used, and all other portions of the Application to Launch area are disabled.
7. Select or clear the **Launch built-in application** option. When enabled, the built-in Serial Session Viewer application will be used to connect to this unit.
8. If you select the Launch built-in application checkbox, you can also select or clear the **Open Window before login** option. When this checkbox is selected, the Serial Session Viewer Telnet

window opens before any login attempt is made to the unit. This feature is useful when debugging a login script and is usually disabled otherwise.

9. Select or clear the **Launch user-specified application** option. When enabled, the telnet application specified in the field below the checkbox will be used.
10. Enter the directory path and name, or click **Browse** to locate the path and name.
11. Enter command line arguments in the box below the path and name.
12. To insert a predefined macro at the cursor location in the command line, click **Insert Macros,** and select a macro from the dropdown list. The HP IP Console Viewer automatically replaces these variables when the application runs.
13. Select or clear the **Launch in command window** option. When enabled, the user-specified telnet application will be launched from within an operating system command window.
14. Click another tab to change additional properties.

    -or-

    If finished, click **OK** to save new settings.

    -or-

    Click **Cancel** to exit without saving the new settings.

Network tab

The Network tab enables you to change the IP address for the console switch.

1. Select an individual console switch from the selected view.
2. Select **View>Properties** from the menu bar. The General tab appears.

   -or-

   Click **Properties.** The General tab appears.

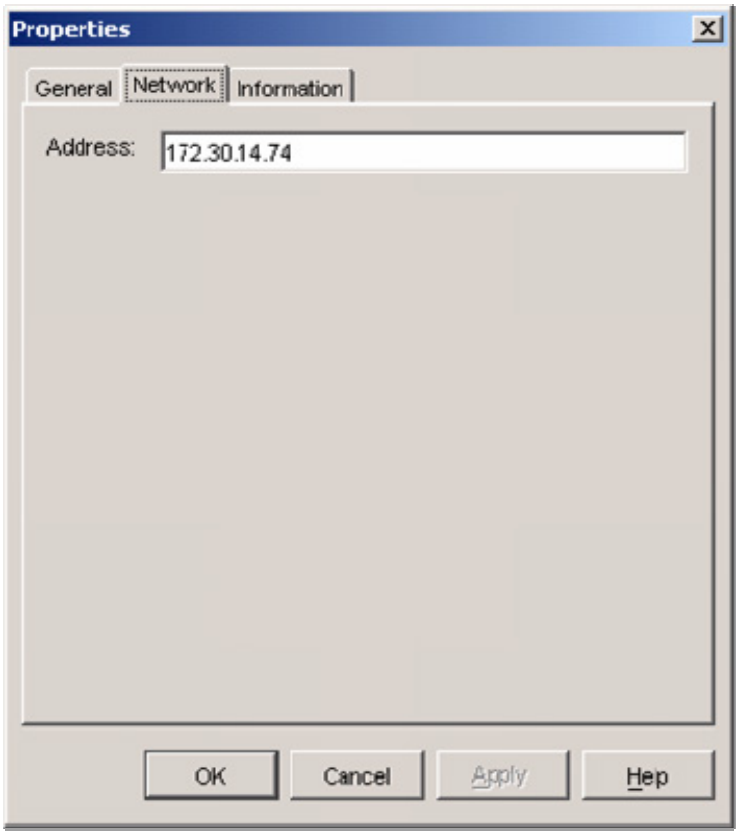
   -or-

   Highlight and right-click the console switch, and select **Properties.** The General tab appears.
3. Click **Network.**
4. Enter an IP address in the Address: field. This field can contain an IP dot notation or a domain name. Duplicate addresses are not allowed, and the field cannot be left blank. You can enter up to 128 characters.
5. Click **Apply>OK** to save the new settings.

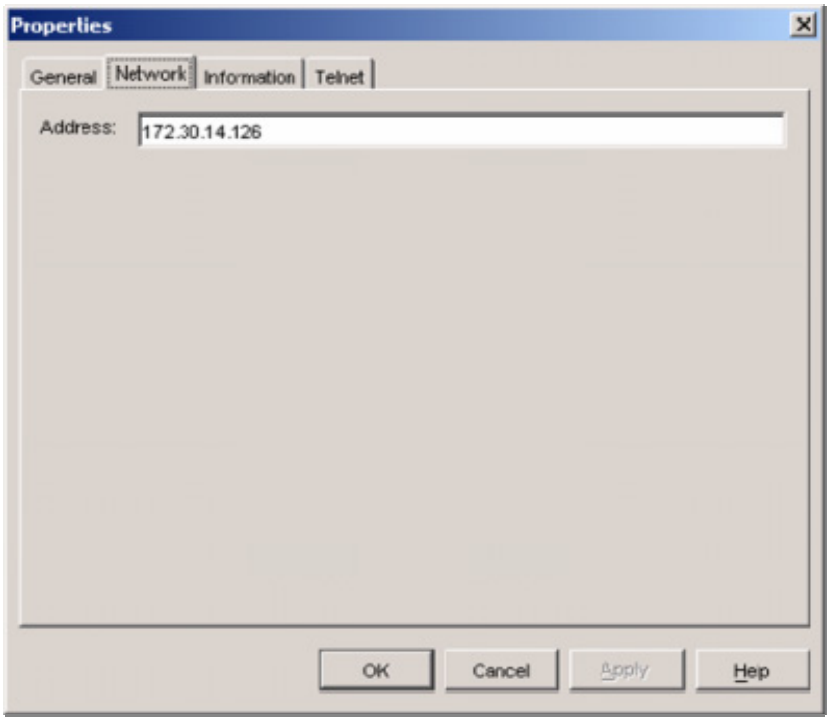
   -or-

   Click **Cancel** to exit.

KVM console switch Network tab



Serial console switch Network tab



iLO tab

The iLO tab enables you to populate the iLO URL field with the iLO address for the server. After you have entered your iLO addresses, an iLO button appears at the bottom of the main window. By default, clicking **iLO** launches the default system browser and goes to the specified URL.

1. Select an individual server from the selected view.
2. Select **View>Properties** from the menu bar. The General tab appears.

   -or-

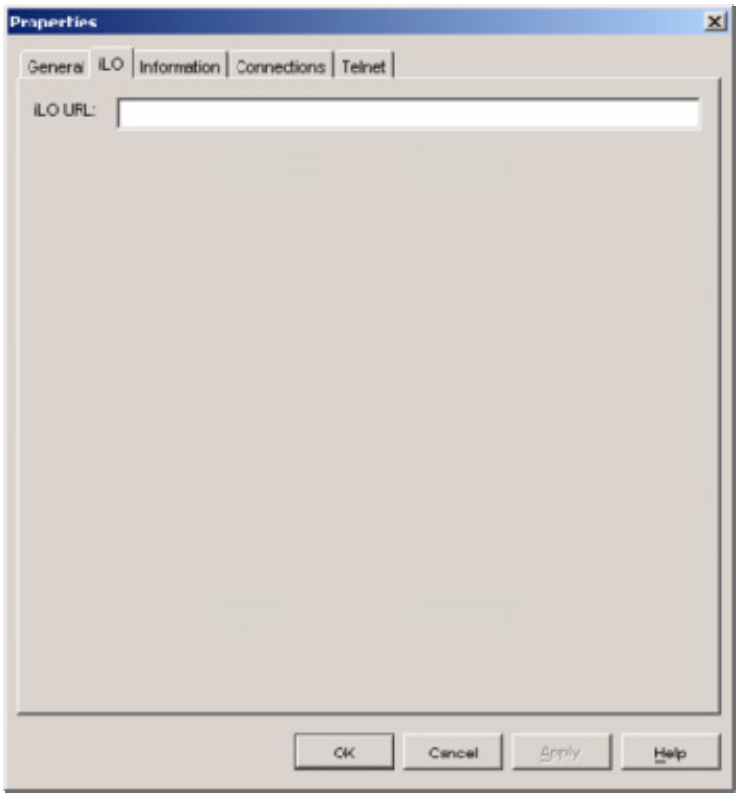
   Click **Properties.** The General tab appears.

   -or-

   Highlight and right-click the server, then select **Properties.** The General tab appears.
3. Click **iLO.**
4. Enter a URL in the iLO URL: field. The field is optional and can be left blank. If the field contains a value, then the iLO button appears in the Task window, launching the default browser to the specified URL.
5. Click **Apply>OK** to save the new settings.

   -or-

   Click **Cancel** to exit.



Information tab

The Information tab enables you to enter information about the unit, including a unit description, contact information, and any comments you might want to add.

1. Select an individual unit from the selected view.
2. Select **View>Properties** from the menu bar. The General tab appears.

-or-

Click **Properties.** The General tab appears.

-or-

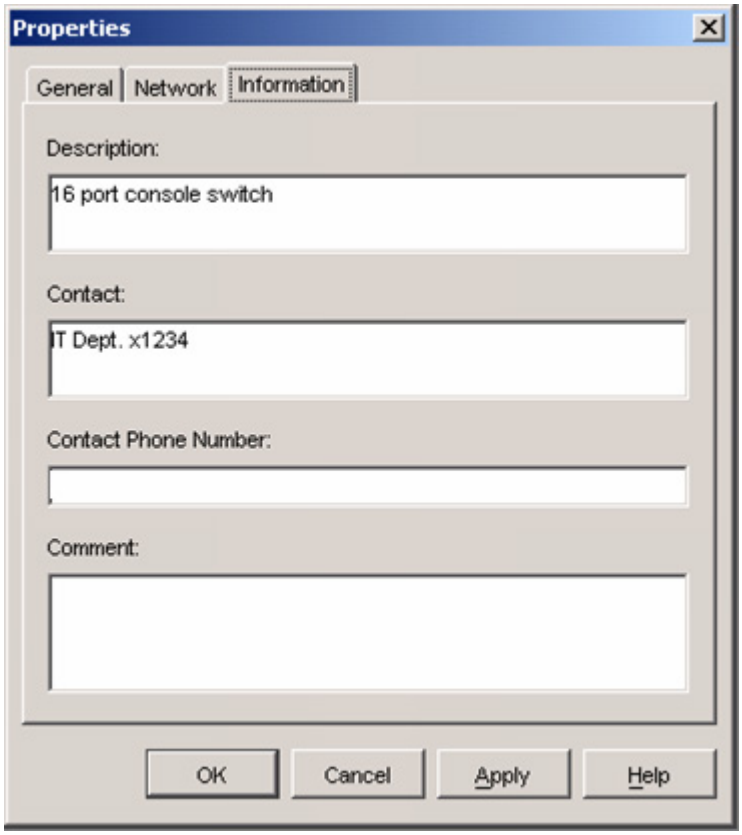
Highlight and right-click the unit, and select **Properties.** The General tab appears.

3. (Optional) Click **Information,** and
4. Enter information into the appropriate fields.
5. Click **Apply>OK** to save the new settings.

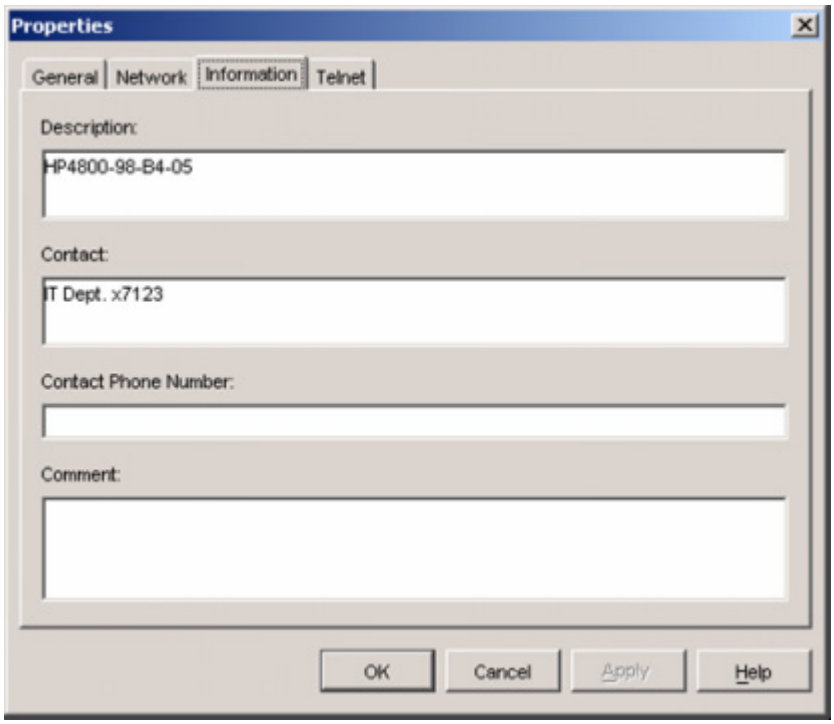
   -or-

   Click **Cancel** to exit.

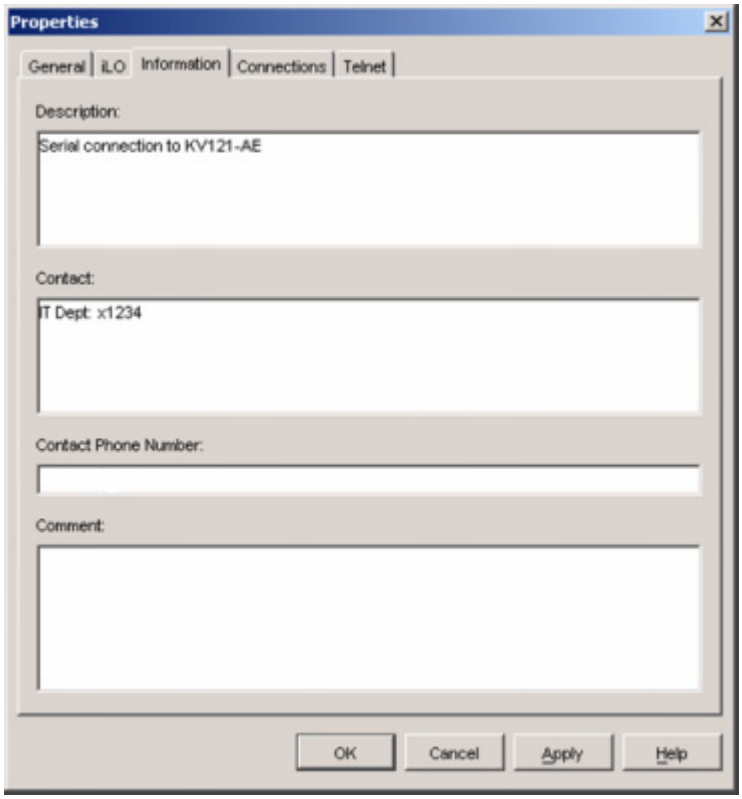
KVM console switch Information tab



Serial console switch Information tab



Server Information tab



Connections tab

The Connections tab enables you to view connections.

1. Select an individual server from the selected view.
2. Select **View>Properties** from the menu bar. The General tab appears.

   -or-

   Click **Properties.** The General tab appears.

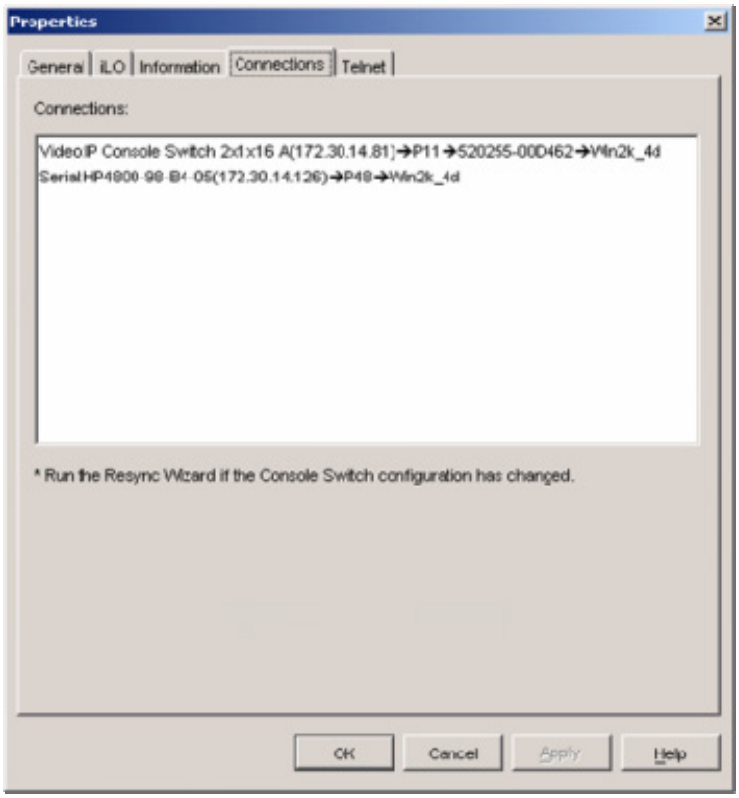
   -or-

   Highlight and right-click the server, and select **Properties.** The General tab appears.
3. Click **Connections** to view the connection path.
4. Click **Apply>OK** to save the new settings.

   -or-

   Click **Cancel** to exit.

If a server is connected directly into a serial console switch or an expansion module, then the connection sequence is as follows: connection type (Video or Serial), console switch name with IP address in parentheses, serial port number, and the server name.



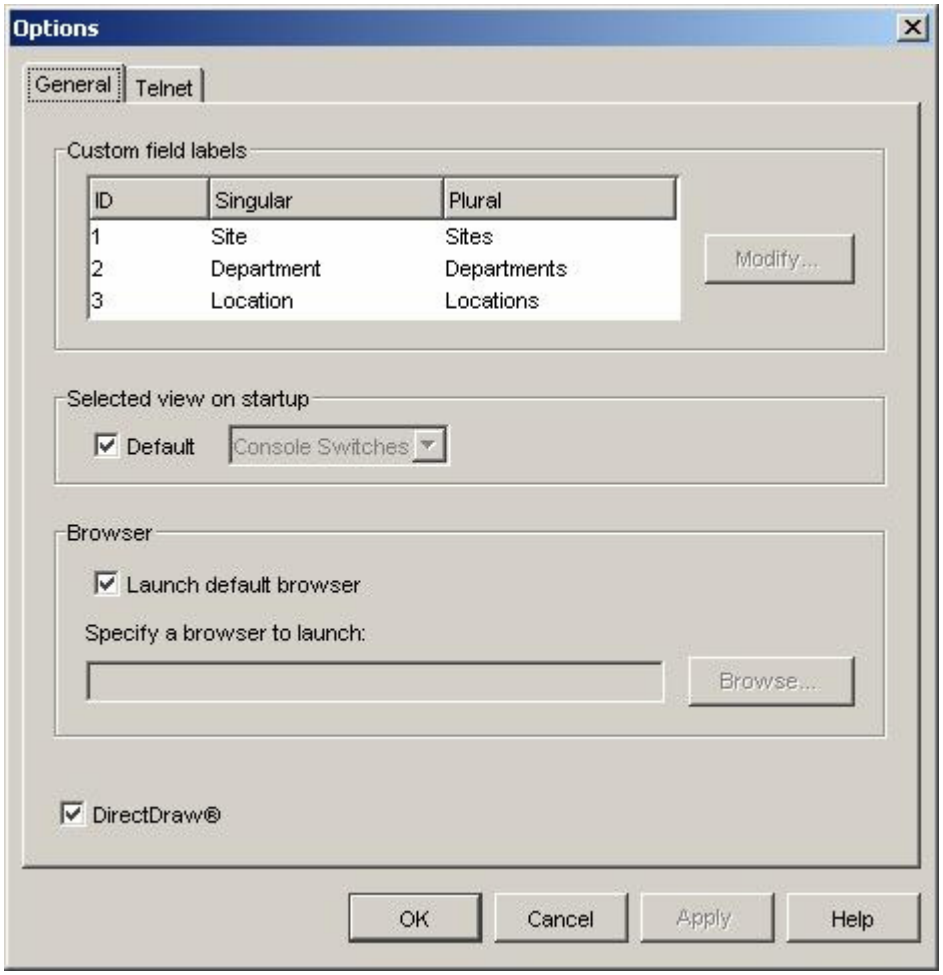
Customizing options

Creating custom field labels

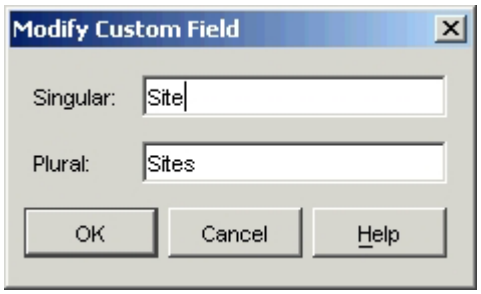
A custom field label enables you to change the Site, Department, and Location names of the column headings that display in the group and selected views. This functionality enables you to group and sort console switches and servers in ways that are meaningful to you. The Department field is a subset of Site. If you customize these field names, keep this hierarchy in mind.

Setting up custom field labels

1. From the main window, select **Tools>Options.** The Options dialog box appears.



2. Select a custom field label.
3. Click **Modify.** The Modify Custom Field dialog box appears.



4. Enter the singular and plural versions of the field label. The length can be from one to 32 characters. A blank value is not allowed. Spaces are allowed in the middle, but leading and trailing spaces are not allowed. The label can consist of any combination of characters that can be entered from the keyboard.
5. Click **Apply>OK.**

   -or-

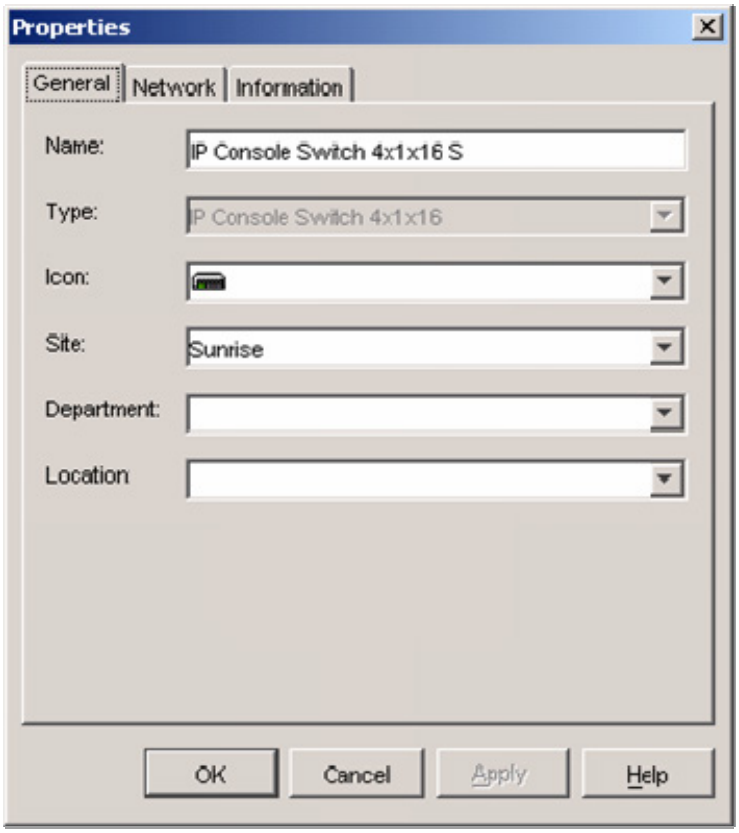
   Click **Cancel** to exit.

Creating new sites, departments, or locations

1. Select **View>Properties.**

   -or-

   Select the unit, and click **Properties.** The Properties dialog box appears.



2. Click **General,** and select the site, department, or location from the dropdown list.

NOTE: The dropdown lists are empty until you enter more than one name for the selected category.

3. Enter a name up to 32 characters long. Names are not case-sensitive and can consist of any combination of characters entered from the keyboard. Spaces are allowed in the middle, but leading and trailing spaces are not allowed. Duplicate names are not allowed.
4. Click **Apply>OK.** The new site, department, or location is appears in the group view.

Creating new folders

1. Click **Folders.**
2. Click the **Folders** directory, and select **File>New>Folder** from the task bar. The New Custom Folder dialog box appears.
3. Enter a name up to 32 characters long. Names are not case-sensitive and can consist of any combination of characters entered from the keyboard. Spaces are allowed in the middle, but leading and trailing spaces are not allowed. Duplicate names are not allowed at the same level but are allowed across different levels.
4. Click **Apply>OK.** The new folder is appears in the group view.

Modifying the selected view on startup

The main window can be resized. Each time the HP IP Console Viewer is displayed, the window appears in the default size and location. The default size and location can be changes while the HP IP Console Viewer is running, but the information is not saved. When the default option is cleared, the main window displays the view selected in the dropdown list. The dropdown list is enabled only when the default checkbox is cleared.

A split-pane divider runs from the top to the bottom and separates the group view and the selected view. The divider can be moved left and right to change the viewing area of the group view and selected view. Each time the HP IP Console Viewer is displayed, the divider appears in the default location.

To modify the selected view on startup:

1. Click **Tools>Options.** The Options dialog box appears.
2. Select the default checkbox, and click **OK** to exit.

   -or-

   Leave the default checkbox cleared, and proceed to step 3.
3. Select either **Console Switches, Servers, Sites,** or **Folders** from the dropdown list.
4. Click **Apply>OK** to save the changes.

   -or-

   Click **Cancel** to exit.

Changing the default browser

You can specify which browser is displayed when a server URL in a browser window is viewed. You can select a specific browser or use the default browser.

To change the default browser:

1. Select **Tools>Options.** The Options dialog box appears.
2. Clear the **Launch Default Browser** option. The Browser button is enabled.
3. Click **Browse,** and navigate to the browser.
4. Click **Apply>OK** to save the changes.

   -or-

   Click **Cancel** to exit.

Using Direct Draw

(Microsoft® Windows® only) Direct Draw is a standard that enables direct manipulation of video display memory, hardware video data transfers, hardware overlays, and page flipping without the intervention of the GDI. This direct path results in smoother animation and display-intensive software that runs faster and avoids screen flicker. By default, Java™ uses Direct Draw to enhance performance of the video.

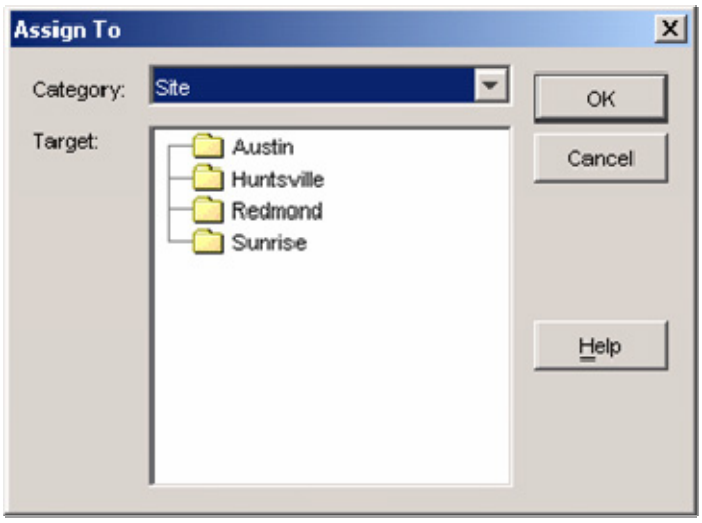
Assigning units to sites, departments, locations, or folders

You can assign a console switch or server to a site, department, location, or folder. This menu item is enabled only when a single console switch or server is selected in the selected view. These custom targets are defined in the General tab of the Properties dialog box.

To assign a unit to a site, department, location, or folder:

1. Select the unit in the selected view.

2. Select **Edit>Assign To** in the menu bar, or click **Assign To** in the Task window. The Assign To dialog box appears.



3. Select the category **(Site, Department, Location,** or **Folder)** from the dropdown list.
4. Select the target from the list of available targets that the console switch can be assigned to within the selected category. This list is empty if no site, department, location, or folder has been defined in the local database.
5. Click **OK** to save the assignment.

   -or-

   Click **Cancel** to exit.

To drag and drop a unit into a site, department, location, or folder:

1. From the main window, click and hold the desired row in the selected view.
2. Drag the item to the desired directory in the group view, and then release the mouse button.

NOTE: A unit cannot be moved to the All Departments, All Console Switches, All Servers, or Root Sites directory. Units can be moved only one at a time.

Deleting and renaming a unit

The delete function is context-sensitive, based on what is currently selected in the group and selected views. When a unit in the selected view is selected and deleted, the server is removed from the local database. When an item is selected and deleted in the tree view of the group view, you can delete server types, sites, departments, location, and folders. However, none of these actions results in console switches being deleted from the local database. The HP IP Console Viewer also provides the ability to rename items in the database, including individual devices, sites, departments, locations, and folders.

NOTE: For legacy analog console switches (such as HP 2 x 16 KVM Server Console Switches, HP 1 x 8 IP Console Switches, and Compaq legacy analog switches) if you delete or rename a server through the HP IP Console Viewer, the OSD server list becomes out of date. For KVM console switches with Virtual Media, you can delete or rename a server through the Servers category in the Manage Console Switch window and the interface adapter and server name in the main window are dynamically updated.

Deleting a unit, site, department, location, or folder

1. Select the unit, site, department, location, or folder to be deleted from the group view.

2. Select **Edit>Delete.** A dialog box appears confirming the number of units affected by this deletion, and if the unit is a console switch, then the dialog box includes a checkbox (enabled by default) asking whether associates servers should be deleted also.

   -or-

   Click **Delete.**
3. Click **Yes**. Additional message prompts might appear, depending on the configuration.

Renaming a unit, site, department, location, or folder

1. Select the unit, site, department, location, or folder.
2. Select **Edit>Rename.** The Rename dialog box appears.
3. Enter a name up to 32 characters long. Names are not case-sensitive and can consist of any combination of characters entered from the keyboard. Spaces are allowed in the middle, but leading and trailing spaces are not allowed. Duplicate names are not allowed, with the exception of departmental names, which can be duplicated across different sites, and folder names, which can be duplicated across different levels.
4. Click **Apply>OK.**

   -or-

   Click **Cancel** to exit.

Managing local databases

Each workstation running the HP IP Console Viewer contains a local database that records all of the information that is entered about the console switches and servers. If multiple workstations access a server, you can configure them and save a copy of the database and load it onto other workstations to avoid reconfiguring each one. You can also export the database for use in another application.

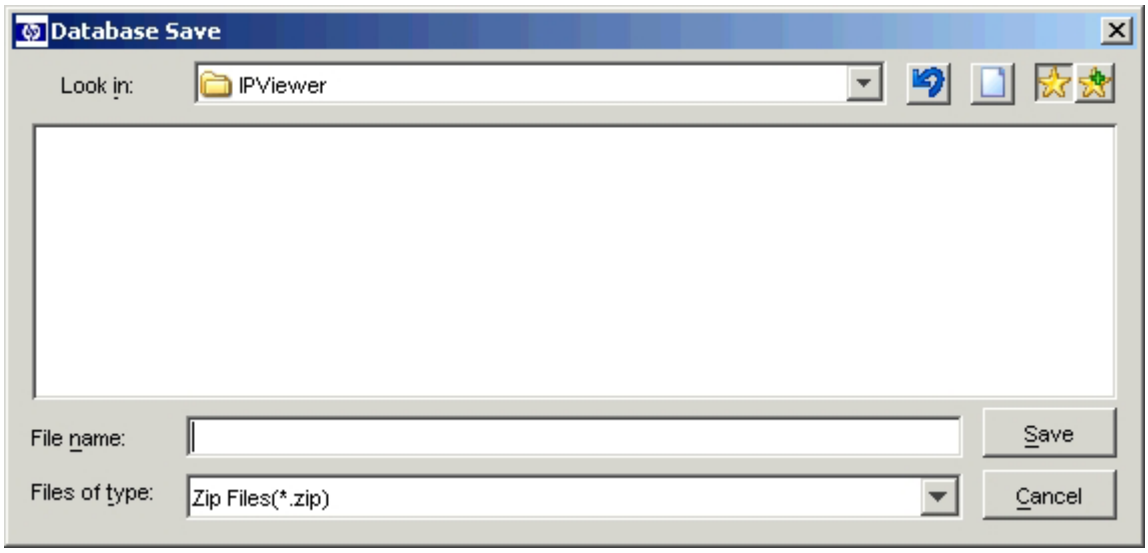
Saving local databases

The HP IP Console Viewer enables you to save a copy of the local database. The saved database can then be loaded back to the same computers on which it was created, or it can be loaded on another HP IP Console Viewer client station. The saved database is compressed into a single .ZIP file.

While the database is being saved, no other activity is allowed. All other windows, including the Video Session Viewer and Serial Session Viewer, and Manage Console Switch windows, must be closed. If other windows are open, a message appears, prompting you to either continue, which closes all open windows, or quit, which cancels the database save process.

To save local database:

1. Select **Files>Database>Save.** The Database Save dialog box appears.



2. Enter a file name, and browse to where the file is saved.
3. Click **Save.** A progress bar appears during the save. When finished, a message appears, indicating that the save was successful.

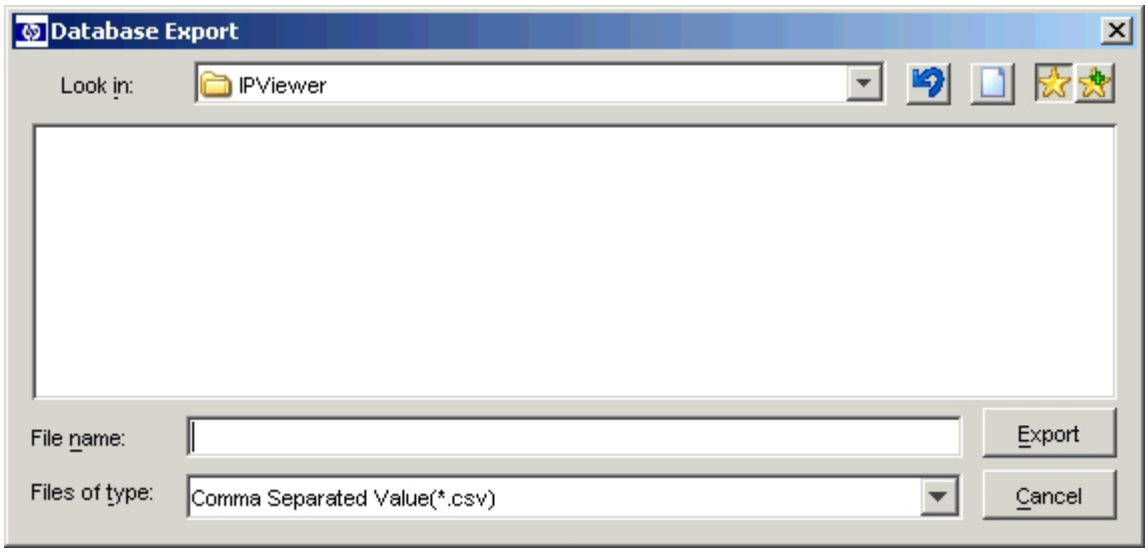
Exporting local databases

This function enables you to export fields from the local database to an ASCII .CSV file or .TSV file.

NOTE: The Address field only applies to console switches, and the Browser URL field only applies to servers. In the exported file, the Address field data is empty for servers and the Browser URL field data is empty for console switches.

To export a local database:

1. Select **File>Database>Export.** The Database Export dialog box appears.



2. Enter a file name in the file name: field, and browse to the location where you want to save the exported file.
3. Select the type of export format from the Files of Type: dropdown list.

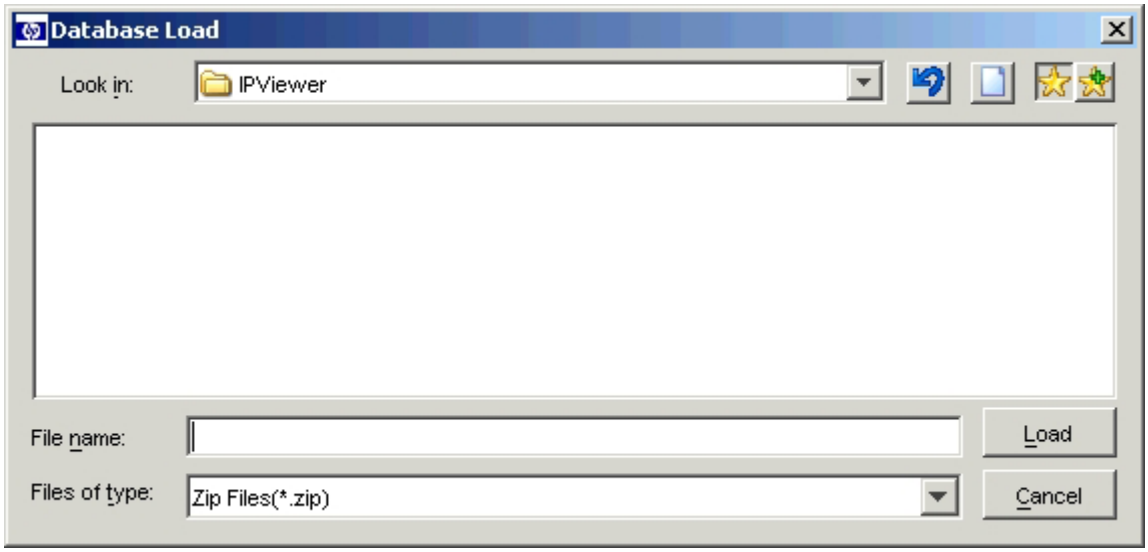
4. Click **Export.** A progress bar appears during the export. When finished, a message appears, indicating that the export was successful.

Loading local databases

This function enables you to load a database that was previously saved. While the database is being loaded, no other activity is allowed. All other windows, including Video Session Viewer and Serial Session Viewer, and the Manage Console Switch windows, must be closed. If other windows are open, a message appears, prompting you to either continue, which closes all open windows, or quit, which cancels the database save progress.

To load a local database:

1. Select **File>Database>Load.** The Database Load dialog box appears.



2. Browse to select the database to load.
3. Click **Load.** A progress bar appears. When loading is finished, a message appears, indicating that the load was successful.

Using directory services integration

In this section

Using LDAP 182
LDAP Authentication Only mode 182
LDAP Authentication and Access Control mode 183
LDAP Authentication and Access Control Query types 183
Enabling directory services integration 186
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Configuring LDAP parameters 189
Console switch and server query modes 193
Setting up the Active Directory for performing group attribute mode queries 198

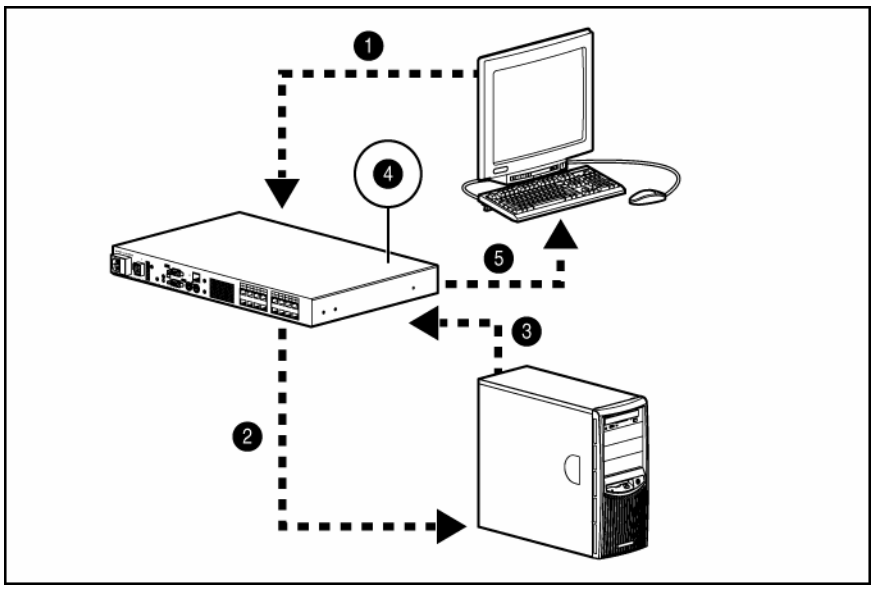
Using LDAP

You have two options for using LDAP:

- LDAP Authentication Only
- LDAP Authentication and Access Control

LDAP Authentication Only mode

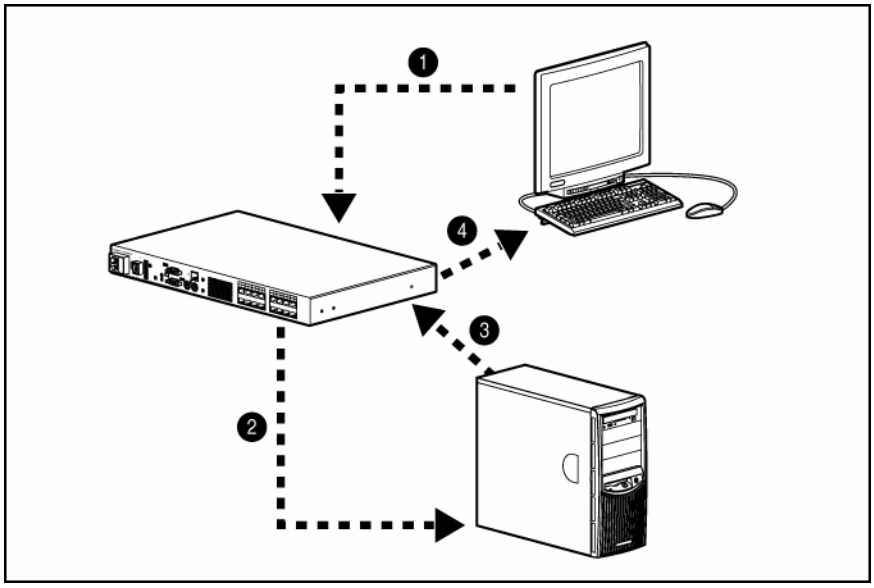
In LDAP Authentication Only mode, the domain controller authenticates the user name and password, but access rights are still held on the console switch itself. So the console switch authorizes access. This solves the problem of distributed password management on the console switches and provides Directory based security.



Item	Description
1	User sends request to console switch to access server
2	Switch sends ID and password to domain controller
3	Directory authenticates
4	If authenticated, console switch authorizes access from its database
5	If authorized, console switch allows console session for user

LDAP Authentication and Access Control mode

In LDAP Authentication and Access Control mode, the domain controller authenticates and authorizes access.



Item	Description
1	User sends request to console switch to access server
2	Console switch sends ID and password to domain controller
3	Directory authenticates and authorizes
4	If authenticated and authorized, console switch opens console session for user

LDAP Authentication and Access Control Query types

You can make three different types of requests:

- To administer the console switch
- To administer users of a serial console switch
- To set up a remote console session with a server (target device)

In LDAP Authentication and Access Control mode, the console switch forwards these requests, or query types, to the domain controller.

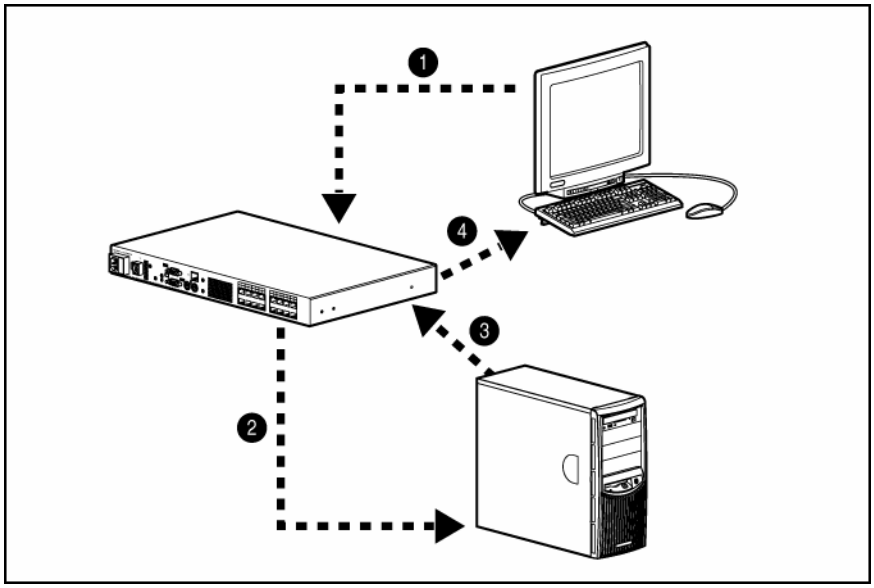
Query modes

The domain controller authenticates the user, but you determine how the domain controller handles authorization for each type of query. There are three authorization options:

- Basic mode (should only be used to test LDAP or console switch settings)
- User Attribute mode
- Group Attribute mode

LDAP Authentication and Access Control Basic Mode

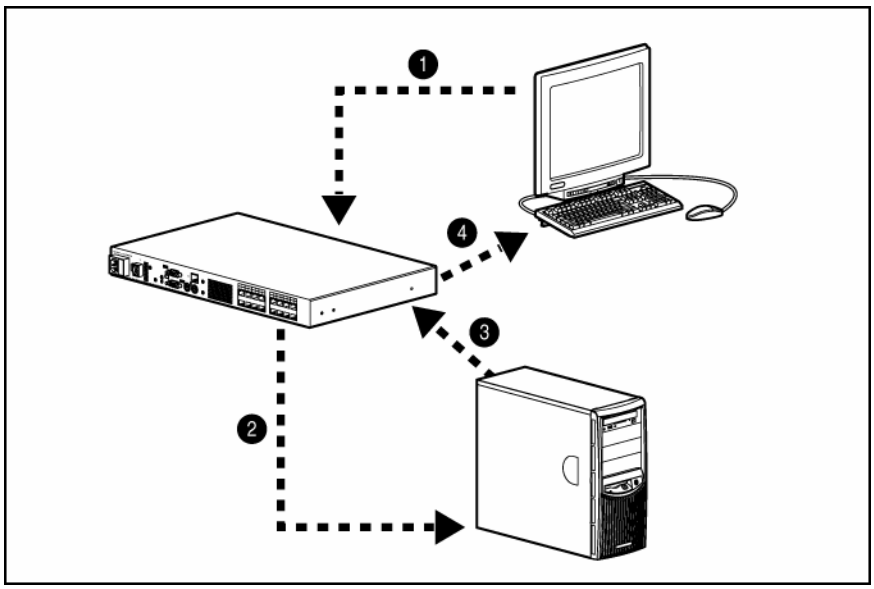
In basic mode, if the domain controller authenticates the user, the console switch grants full access to the console switch or the server. HP recommends that the basic mode only be used for setup and testing and not in the production environment.



Item	Description
1	User sends the request to console switch to access server
2	Console switch sends ID and password to domain controller
3	Directory authenticates the user name and password
4	If authenticated the console switch opens a console session for the user

LDAP Authentication and Access Control User Attribute Mode

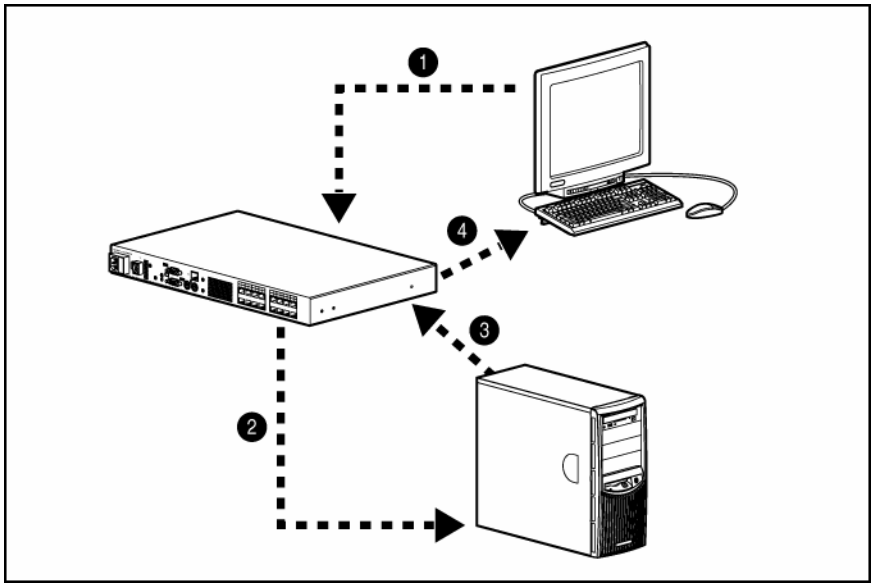
In user attribute mode, if the domain controller authenticates the user, it grants access to the console switch or the server based on the access rights assigned to the user in the Active Directory.



Item	Description
1	User sends request to console switch to access server
2	Console switch sends ID and password to domain controller
3	Directory authenticates and authorizes based on the rights assigned to the user object
4	If authenticated and authorized, console switch opens console session for user

LDAP Authentication and Access Control Group Attribute Mode

In group attribute mode, if the domain controller authenticates the user, it grants access to the console switch or the server based on the permissions granted to the group that the user and the console switch, or server, are in. Access rights are set at the group level. If the user and console switch, or server, are in the same group, then the group access rights determine what the user can do.



Item	Description
1	User sends request to console switch to access server
2	Console switch sends ID and password to domain controller
3	Directory authenticates and authorizes if user and console switch or server are in the same group
4	If authenticated and authorized, console switch opens console session for user

Enabling directory services integration

IMPORTANT: Before implementing directory services integration functionality, refer to "HP IP Console Switch directory services integration setup tutorial (on page 208)" for a better understanding of how Directory Services integration works.

1. Access the console switch.
   a. Click **Console Switches** to display the console switches in the selected view.
   b. Double-click the desired console switch.

      -or-

      Select the console switch, and click **Manage Console Switch.**

      -or-

      Right-click the console switch, and click **Manage Console Switch.**

      -or-

      Click **Console Switches,** and press the **Enter** key.

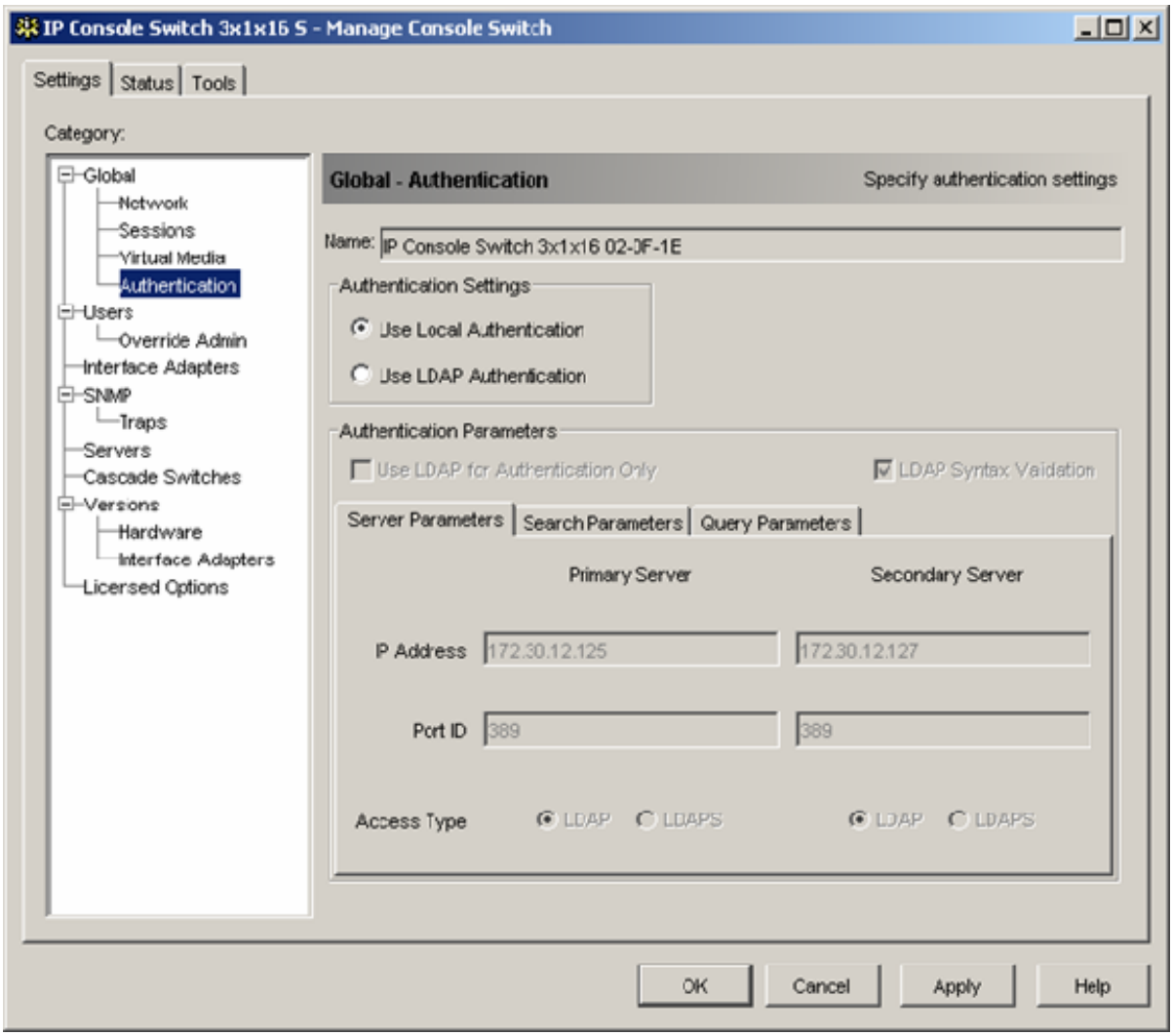
      A login dialog box appears.

c. Enter a valid user name and password. If a new user name and password have not been created, the default user name is `Admin` (case-sensitive) and the default password field is blank.

IMPORTANT: If you have previously logged in to the console switch during the same HP IP Console Viewer session, the login dialog does not display unless authentication or authorization fails or you clear the login credentials.

d. Click **OK.** The Manage Console Switch window appears.

2. Select **Global>Authentication** the Use LDAP Authentication setting becomes accessible, and the Authentication parameters are displayed, but not accessible unless Use LDAP Authentication is selected.



3. To enable local authentication and authorization, select **Use Local Authentication.** The Local method uses information from the Users subcategory to authenticate and authorize users attempting to manage the console switch or view an attached server.

   -or-

   To enable LDAP authentication and authorization, select **Use LDAP Authentication.** The LDAP method uses information from the LDAP Directory Service to authenticate and authorize users attempting to either manage the console switch or view and attached server.

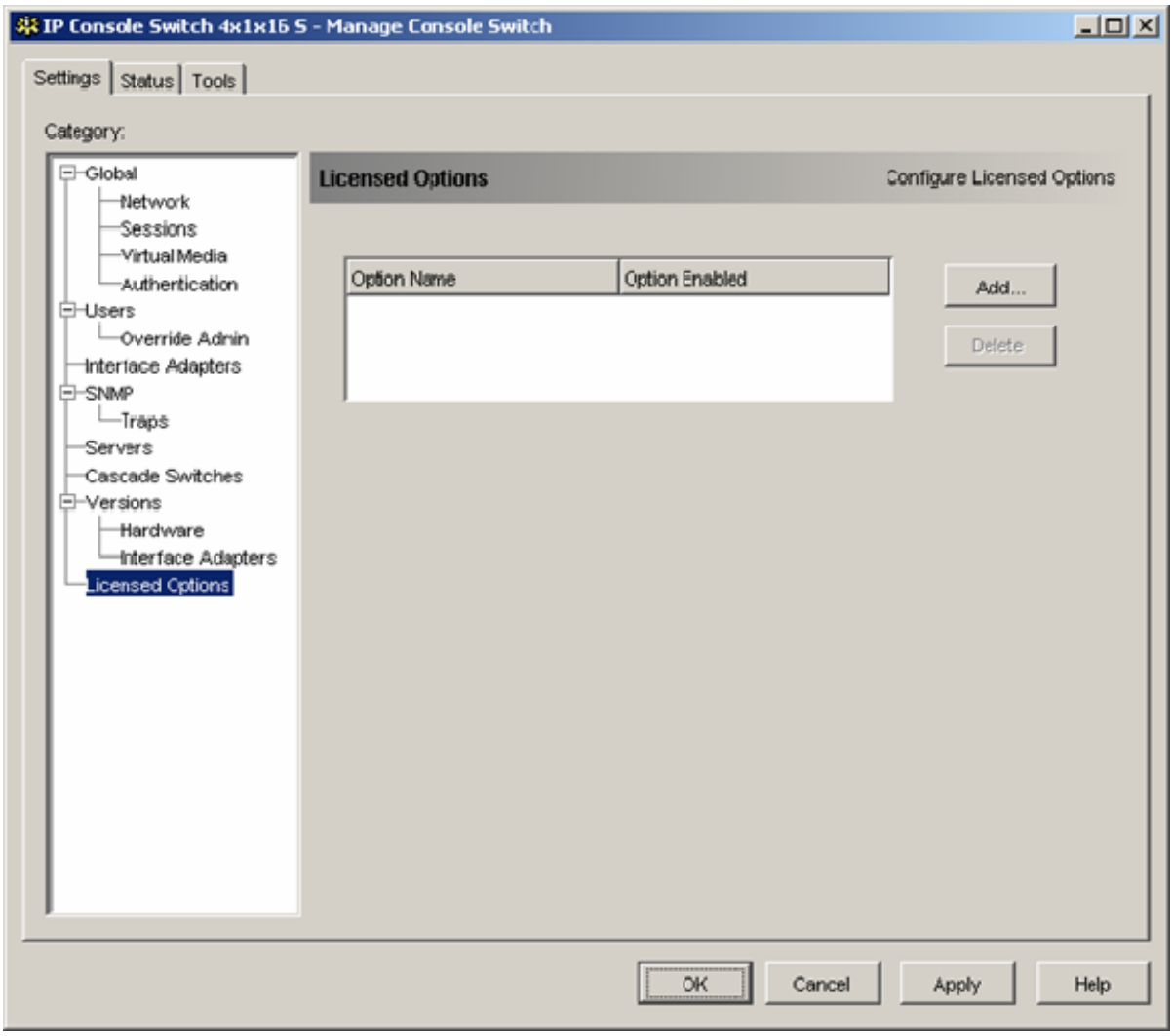
4. If Use LDAP Authentication is selected, then by default both authentication and authorization are controlled by information stored in the LDAP Directory Service. However, it is possible to specify that only authentication is to be controlled by the LDAP Directory Service, while authorization is to be

controlled by information in the Users category. Select **Use LDAP for Authentication Only** if authentication is to be controlled by the LDAP Directory Service and authorization is to be controlled by the console switch.

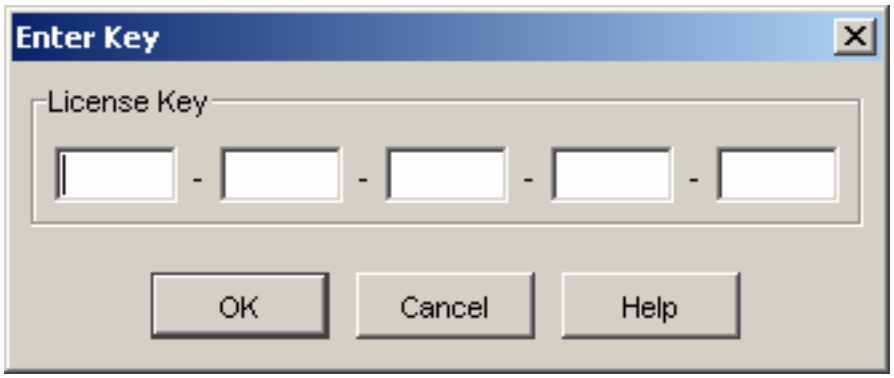
Entering the default LDAP license key

The HP IP Console Switches with Virtual Media and the serial console switches have the LDAP Authentication option enabled by default. However, if you should accidentally delete the LDAP license key, you can re-enter it through the Manage Console Switch window. This option is not available for serial console switches. The license key is permanent and cannot be deleted.

1. Select **License Options.** The Licensed Options window appears.



2. Click **Add.** The Enter Key dialog box appears.



3. Enter `387S9-M3228-JRM85-D2RZQ-NK8JR.`
4. Click **OK.**

   -or-

   Click **Cancel** to exit without saving changes.

Configuring LDAP parameters

There are differences between the LDAP-based access controls used by console switches and Kerberos-based access control that Windows® uses by default when users log in to workstations and servers. Some of the user account properties in Active Directory apply only to Kerberos, while some apply to both Kerberos and the LDAP-based access controls used by console switches. For example, configurable user restrictions, like the "Log On To," "Logon Hours," and "Managed By" features, in Active Directory do not apply to console switches and their attached servers. Other features, like user account expiration, user account lockout, and the capability to disable a user account, do apply to console switches and attached serves (subject to configuration of associated parameters in Active Directory). Because of the complexity of Active Directory, it is always useful to run test cases to confirm it is correctly configured to enforce the desired security policy. It is important to remember that LDAP cannot access the ACL data used by Windows® to make its access control decisions. HP recommends following the configuration guidance provided by this user guide. Configurations outside that guidance are not supported.

If individual user accounts are stored on an LDAP-enabled Directory server, such as Active Directory, you can use the Directory service to authenticate users.

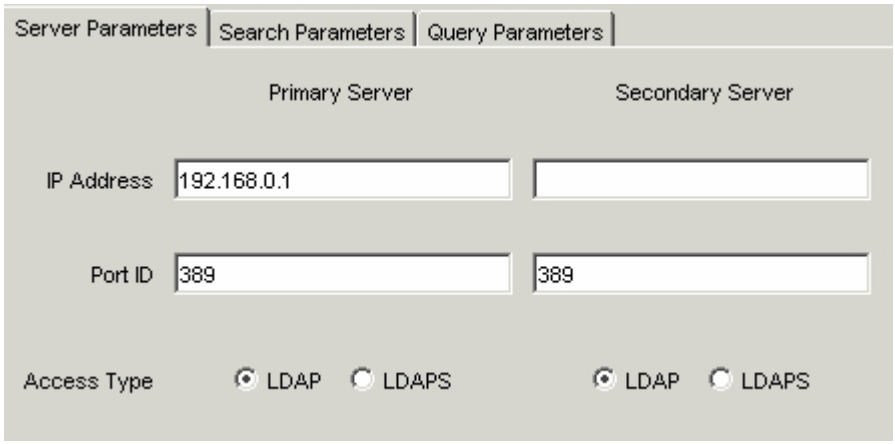
The settings made in the Authentication subcategory enable you to configure your authentication configuration parameters. The HP IP Console Viewer sends the user name, password, and other information to the console switch, which then determines whether the HP IP Console Viewer user has permission to view or change configuration parameters for the console switch in the HP IP Console Viewer main window.

△ **CAUTION:** Unless otherwise specified, use the LDAP default values unless Active Directory has been reconfigured. Modifying the default values might cause LDAP server communication errors.

There are three tabs for configuring LDAP parameters.

Server Parameters tab

The Server Parameters tab displays the parameters that define LDAP server connection information.



Enter the primary and secondary server IP address of Directory servers in the IP Address fields. Each address can be entered in numeric form or by specifying a symbolic name that is registered in the DNS service.

NOTE: Entering information into the Secondary Server IP Address field is optional.

Enter the UDP port numbers that are used to communicate with the LDAP servers in the Port ID fields. The default value is 389 for non-secure LDAP and 636 for secure LDAP. The HP IP Console Viewer automatically enters the Port ID when an Access Type is specified.

Specify how a query is sent to each Directory server by selecting the appropriate Access Type radio button. Selecting the LDAP radio button sends plaintext, while the LDAPS radio button sends LDAP over SSL.

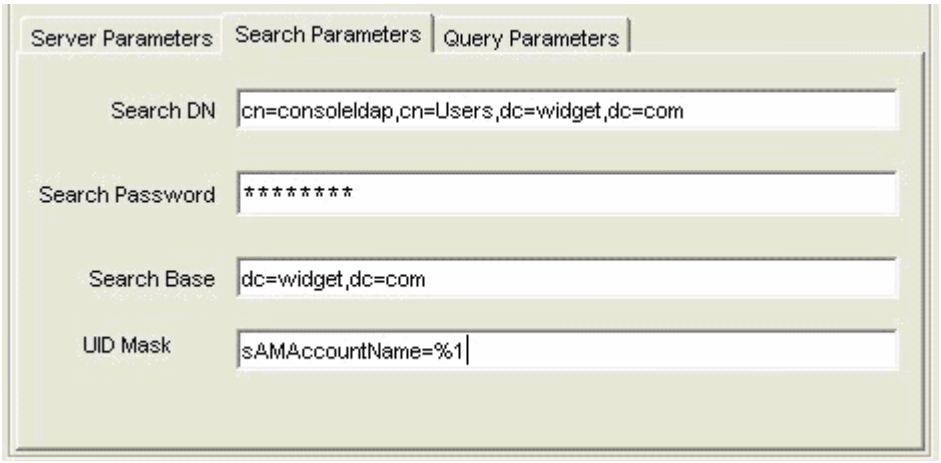
NOTE: When the LDAP radio button is selected, all communication is sent as non-secure plaintext between a console switch and a Directory server are sent as non-secure plaintext. For secure, encrypted communication between a console switch and the LDAP server, select the **LDAPS** radio button.

NOTE: LDAPS is only valid if the directory server is configured for LDAPS.

Search Parameters tab

The Search Parameters tab displays the parameters used when searching the LDAP Directory Service to find user accounts and accounts that represent servers that are attached to console switches.

NOTE: The information in the Search DN and Search Base fields for dc=parameters must match. For example, in the Search DN field, if you have dc=widget, in the Search Base field, the dc=parameters must also say dc=widget.



The Search DN field enables you to define any user in the directory that the console switch uses to log in to the Directory Service.

NOTE: HP recommends creating a user account specifically for LDAP queries instead of using the admin account.

After the console switch is authenticated, the Directory Service grants it access to the directory to perform the user authentication queries, specified on the Query Parameters tab. The default values are cn=Administrator, cn=Users, dc=yourDomainName, and dc=com and should be modified for your network environment. For example, to define an administrator DN for test.view.com, enter cn=Administrator, cn=Users, dc=test, dc=view, dc=com. This is a required field unless the Directory Service has been configured to allow anonymous search, which is not in the default.

NOTE: A comma must separate each Search DN value.

The Search Password field is used to authenticate the administrator or user specified in the Search DN field.

The Search Base field enables you to define a starting point from which LDAP searches begin. The default values are dc=yourDomainName and dc=com and should be modified for your network environment. HP recommends that the Search Base field be set to the DN of the root of the LDAP Directory Service namespace. For example, to define a search base for test.com, enter dc=test, dc=com.

NOTE: A comma must separate each Search Base value.

The UID Mask field specifies the search criteria for User ID searches of LDAP servers. The format should be in the form <name>=<%1>, where <name> is the schema property name in the directory. The default value is sAMAccountName=%1, which is correct for use with Active Directory. This field is required for LDAP searches.

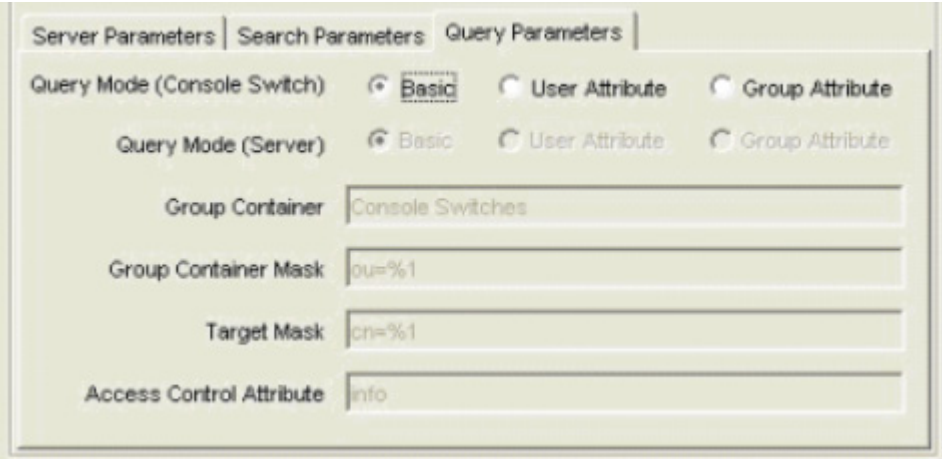
Query Parameters tab

NOTE: When the Use LDAP for Authentication Only checkbox is selected, all of the Query Parameters tab fields are deactivated.

The Query Parameters tab specifies which query method is used to authenticate and authorize the user. It also specifies the parameters associated with each query method.

The console switch performs two different types of queries. Query Mode (Console Switch) is used to authenticate administrators attempting to access the console switch itself. Query Mode (Server) is used to authenticate users who are attempting to access attached servers.

Additionally, each type of query has three modes that utilize certain types of information to determine whether a user has access to a console switch connected servers, or both.



The Query Mode (Console Switch) parameters are used to determine whether an HP IP Console Viewer has Console Switch Administrator or Administrator access to the console switch.

The Query Mode (Server) parameters are used to determine whether a user of the HP IP Console Viewer has user access to servers attached to a console switch. The Query Mode (Server) cannot be used to grant Console Switch Administrator access to a console switch.

The Group Container, Group Container Mask, and Target Mask fields are only used for Group Attribute query modes and are required when performing a Console Switch or Server Group Attribute query.

The Group Container field specifies the OU created in the Active Directory by the administrator as the location for group objects. Group Container is used when Query Mode is set to Group Attribute. Each group object, in turn, is assigned members to associate with a particular access level for member objects (people, console switches, and target servers). Setting the value of an attribute in the group object configures the access level associated with a group. The Access Control Attribute field defines which field in the Directory schema is used to assign access rights. For example, if the Notes property in the group object is used to implement the access control attribute, the Access Control Attribute field in the Query Parameters tab should be set to info, because the schema name of the Notes field is info.

Setting the Notes property to:

- KVM Appliance Admin causes the members of that group to have administration access to the console switches and access to target servers that are connected to the KVM switches as a user.
- KVM User causes the members of that group to have access to any target servers in the group.
- Serial User causes the members of that group to have access to the serial port that is named the same as the server that is a member of that group.
- Serial Appliance Admin causes the members of that group to have appliance administrator rights to the serial console switches that are members of that group.
- Serial User Admin causes the members of that group to have rights to add, delete, or modify user accounts in the serial console switch internal user database.

The Group Container Mask field defines the object type of the Group Container, which is normally an organizational unit. The default value is ou=%1.

The Target Mask field defines a search filter for the server. The default value is cn=%1.

The Access Control Attribute field specifies the name of the attribute that is used in Attribute query modes. The default value is info.

NOTE: The value of the Notes property available in group and user objects shown in Active Directory User and Computers is stored internally in the directory, in the value of the info attribute.

Console switch and server query modes

One of the three different modes might each be used for Query Mode (Console Switch) and Query Mode (Server):

- Basic (should only be used to test LDAP or console switch settings)

  A user name and password query for the HP IP Console Viewer user is made to the Directory Service. If they are verified, the HP IP Console Viewer user is given administrator access to the console switch and any connected servers for Query Mode (Console Switch) or to any selected server for Query Mode (Server).

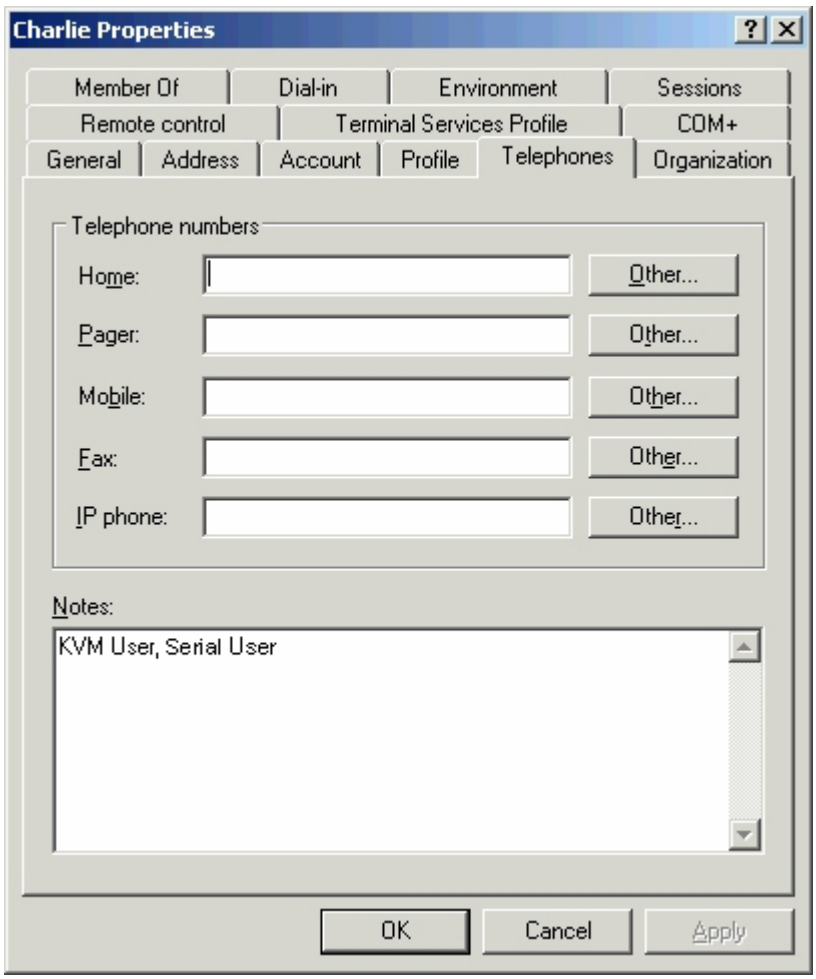
IMPORTANT: This mode enables any user that is in the Active Directory to have full access. This mode is valuable for testing. However, for production, HP recommends that you change this mode.

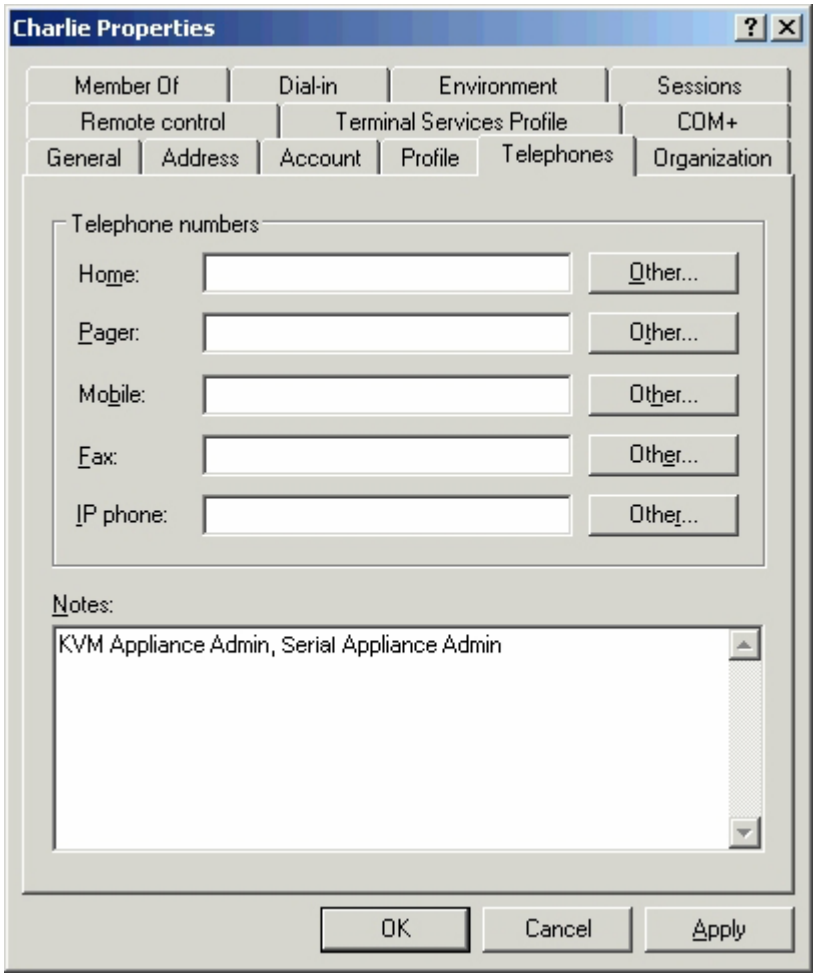
- User Attribute

  A user name, password, and Access Control query for the console switch user is made to the Directory Service. The Access Control Attribute is read from the user object in the Active Directory. The User account field is called info in the schema and is the Notes field in the Telephones tab.

  - If the value KVM Appliance Admin is found, the user is given administrator access to the console switch and any connected servers for Query Mode (Console Switch) or to any devices for Query Mode (Server).
  - If the value KVM User is found, the user is given access to the server.
  - If the value Serial User is found, the user is granted access to the serial ports.
  - If the value Serial Appliance Admin is found, the user is given administrator access to the serial console switch and any connected servers for Query Mode (Console Switch) or to any devices for Query Mode (Server).
  - If the value Serial User Admin is found, the user is given access to the server.

The following are examples showing how the Admin and Console Switch User attribute modes are defined in Active Directory for a user named Charlie.





- Group Attribute

  A user name, password, and group attribute query is made to the LDAP Directory Service for a console switch when using Query Mode (Console Switch) or for all servers when using Query Mode (Server). If a group is found containing the user and the console switch, the user is given access to the console switch, connected servers, or both, depending on the group contents, when using Query Mode (Console Switch). If a group is found containing the user and server IDs, the user is given user access to the specified servers connected to the console switch when using Query Mode (Server). Access rights are granted based on the permissions in the Notes field.

  - If the value KVM Appliance Admin is found, the user is given administrator access to the console switch and any connected servers for Query Mode (Console Switch) or to any servers for Query Mode (Server).
  - If the value KVM User is found, the user is given access to the server.
  - If the value Serial User is found, the user is granted access to the serial ports.
  - If the value Serial Appliance Admin is found, the user is given administrator access to the serial console switch and any connected servers for Query Mode (Console Switch) or to any devices for Query Mode (Server).
  - If the value Serial User Admin is found, the user is given access to the server.

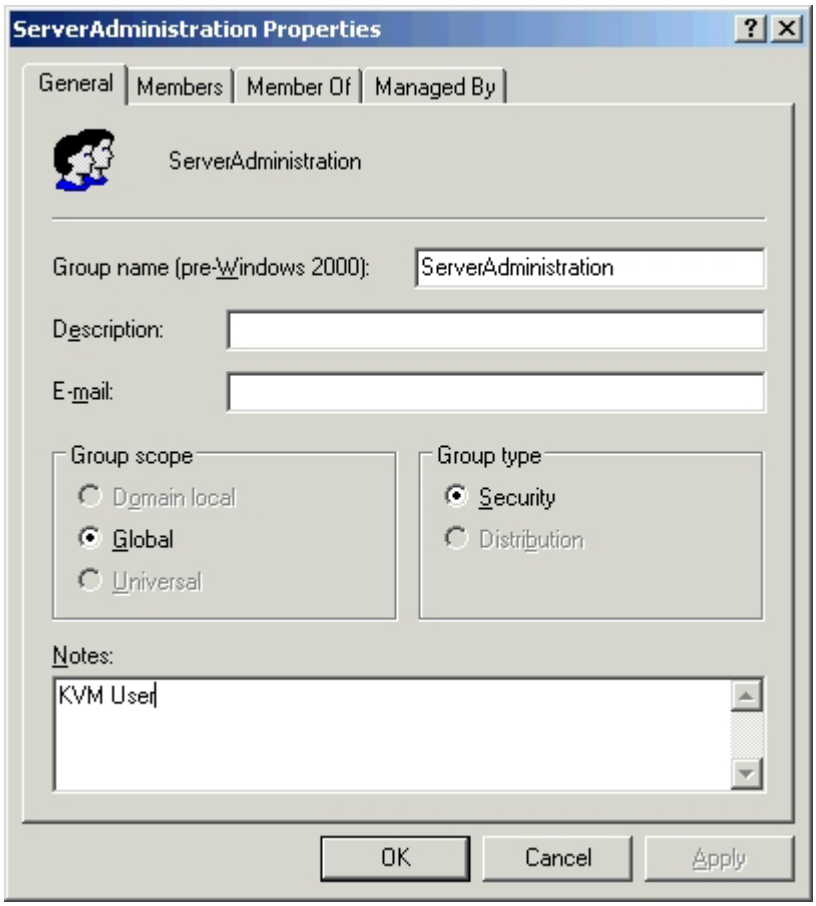
  Groups can be nested to a maximum of 16 levels in depth. Nesting enables you to have groups within other groups. For example, you might have a top-level group named Computers that contains a member named R&D, which is a group. The R&D group might contain a member named Domestic, which is a group.

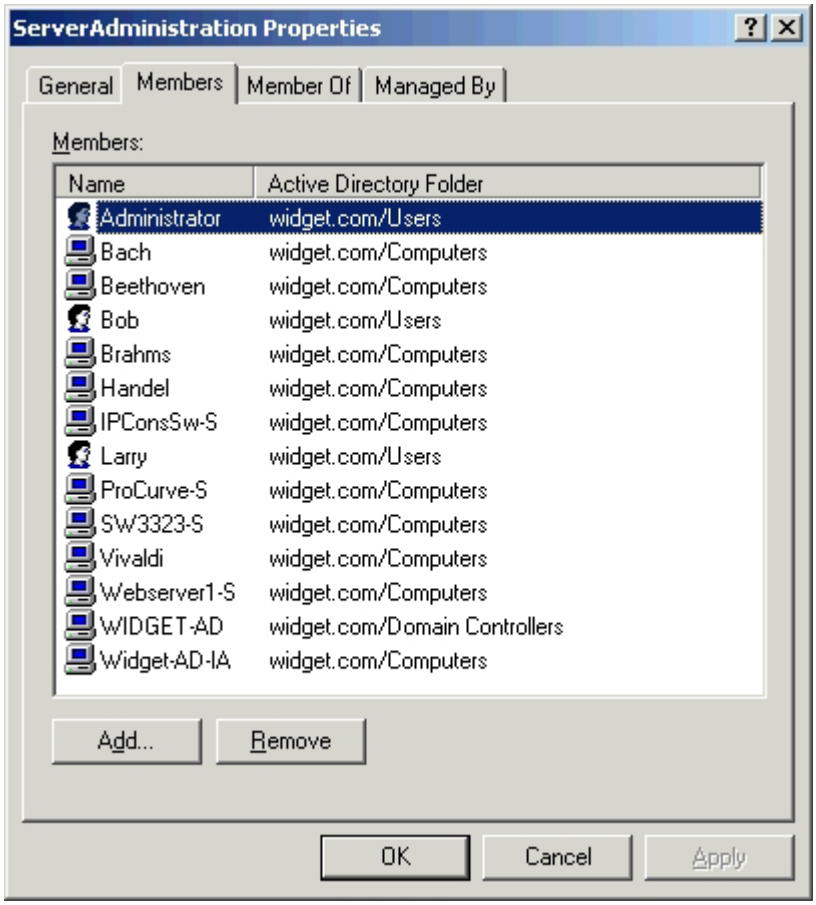
IMPORTANT: Before implementing LDAP functionality, see "HP IP Console Switch directory services integration setup tutorial (on page 208)" for a better understanding of how LDAP works.

IMPORTANT: When assigning more than one access permission to a group or user, you must have one or more of the following delimiters to separate the permissions: <newline>, <c/r>, <comma>, <semicolon>, or <tab>.

NOTE: Nesting to the maximum depth of 16 levels might not always be possible because of potential complexities among the nested groups. For example, if the nested groups are in different LDAP servers, then delays might occur when searching for all members of the nesting. These delays can cause the HP IP Console Viewer application to be unable to resolve the membership of a nesting in a reasonable amount of time.

The following are examples of groups defined in Active Directory.





Setting up the Active Directory for performing group attribute mode queries

Before you can use any of the querying modes for console switches or servers, first make changes to your Active Directory so that the selected querying mode can assign the correct authorization level for the user.

IMPORTANT: Before implementing LDAP functionality, see "HP IP Console Switch directory services integration setup tutorial (on page 208)" for a better understanding of how LDAP works.

The following is an overview of how to set up group attribute mode queries. For more detailed information, see "HP IP Console Switch directory services integration setup tutorial (on page 208)."

To set up group attribute mode queries:

1. Name the interface adapters.
2. Install and launch the HP IP Console Viewer.
3. Discover or manually install a console switch.
4. Access the console switch.
5. Name the console switches.
6. Enable LDAP, if necessary. For more information, see "Enabling directory services integration (on page 186)."
7. On the domain controller, add an OU group container.
8. Create a user, and assign a password (consoleldap) in the Users Directory.
9. Create a computer account for the console switch in the Directory.

10. Create groups for console switch administrators and users.
11. Add the users and servers (or console switches) to the appropriate groups.
12. From the HP IP Console Viewer application, log in to the console switch.
13. Test the LDAP communications from the HP IP Console Viewer application.
14. After the basic LDAP communication test succeeds, log in to the console switch from the HP IP Console Viewer.

NOTE: The console switch names and server names used for group attribute queries are stored in the console switches. The console switch name and server names specified in the SNMP and Servers categories of the Manage Console Switch must identically match the object names in the Active Directory. Each console switch name and server name might be composed of any combination of uppercase and lowercase letters (a through z, A through Z), digits (0 to 9), and hyphens (-). Spaces and periods (.) are not allowed, and the name may not consist entirely of digits. These are Active Directory constraints. The factory default console switch name in earlier versions contains a space that must be removed by editing the system name in the SNMP category of the Manage Console Switch window.

Use the information in "HP IP Console Switch directory services integration setup tutorial (on page 208)" in a test environment before implementing LDAP Authentication in your production environment.

Troubleshooting

In this section

Troubleshooting chart 200

Troubleshooting chart

Issue	Resolution
You cannot access any servers on the console switch after changing the IP address.	The IP address in the Network subcategory and under the console switch Properties window must match to have full functionality.
The LAN connection in the Diagnostic screen displays as green when the network cable has been disconnected from the console switch.	Wait one minute and verify the status of the LAN connection in the Diagnostics screen.
You cannot select the checkbox in front of the type of interface adapters to upgrade.	The checkbox cannot be selected if all interface adapters have current firmware.
The dropdown lists under the console switch Properties window are empty.	The dropdown lists are empty until you enter more than one name for the selected category.
You attempt to launch the Video Session Viewer, and a black screen appears.	There is no communication from the server. • Be sure that the server is powered on. • Be sure that the power source is valid. • Be sure that the cables are connected properly.
The local and remote cursors do not align.	• See "Aligning the cursors (on page 82)." • See "Synchronizing your mouse pointers (on page 13)." • Select **Tools>Automatic Video Adjus**t in the Video Session Viewer.
You have intermittent Video Session Viewer issues.	• Click the **Align Local Cursor** icon in the Video Session Viewer. • Select **Tools>Automatic Video Adjus**t in the Video Session Viewer.
The user name and password are not accepted when you try to access Manage Console Switch.	If a new user name and password have not been created, the default user name is Admin (case-sensitive) and the default password field is blank.
The mouse cursor flickers.	The video driver does not properly support Direct Draw. Clear the **Direct Draw** checkbox under **Tools>Options**.

Issue	Resolution
The mouse leaves pixels changed.	Reduce the noise threshold to refresh smaller pixel quadrant changes.
The Discover Wizard does not discover console switches.	Erase the IP address in the From Address: and the To Address: fields and enter the correct information.
The Discover Wizard is taking a long time to scan a range of IP addresses.	It takes 4 seconds to scan each IP address. Enter a smaller range of IP addresses.
You get a login failure when LDAP is enabled.	Resolve the following: • The search credentials (DN and password) are not valid. • An invalid authentication mode (not basic, attribute, or group) is requested. • The group container cannot be found in the directory (Group Mode only). • The target computer cannot be found (Group Mode only). You might also get this login failure when the LDAP client cannot contact any LDAP server or DNS server.
After enabling Bootp (in the Settings Category) the Discover Wizard does not get an IP address or a random IP address is given.	The IP address must be statically assigned to the MAC address of the console switch. The DHCP server must be enable to respond to Bootp.
The Video Session Viewer is distorted when a serial interface adapter is connected.	Select **Tools>Automatic Video Adjust** in the Video Session Viewer.
You get an "Access cannot be granted due to Authentication Server errors" error when correct user name and password is used while using LDAP for authentication and authorization.	• Verify that the console switch or interface adapter is named exactly the same as in the LDAP directory. • Review the tutorial to gain a better understanding of LDAP functionality. For more information, see "HP IP Console Switch directory services integration setup tutorial (on page 208)."
The Linux HP IP Console Viewer is taking a while to startup.	• Verify that the loopback interface is up. • Verify that the /etc/hosts contains a 127.0.0.1 localhost entry.

When connecting to the HP 16- and 48-Port Serial Console Switch, I am getting an extra line feed.	You must resolve the extra line feed by entering:
	`port x set out if=strip`
	`port x set flow=XonXoff`

Unable to see local USB devices remotely.	Local devices only able to be seen on local OSD.
Unable to see remote devices on local OSD.	Remote devices only seen on client machine.

Issue	Resolution
Virtual Media is not working properly.	Be sure that you are using a: • HP IP console switch with Virtual Media (2 x 1 x 16, 4 x 1 x 16), or an HP Server Console Switch with Virtual Media (2 x 16) • USB 2.0 interface adapter with Virtual Media or a PS2 interface adapter with Virtual Media • Server and operating system that supports high speed composite USB 2.0 devices You must be able to see a Virtual Media CD drive and a mass storage drive on the target server to be able to map a local resource to the remote server.
The keyboard does not respond after opening a Virtual Media session.	See "USB 2.0 composite device limitations (on page 87)."
Virtual Media is responding slowly.	See "Using Virtual Media."
While installing the HP IP Console Viewer on a Windows Server™ 2003 server the installation does not start.	Reboot the server and see "Windows XP SP1 or newer (on page 14)."
LDAP basic test settings fail.	• Be sure that the port you are using for LDAP is open between the console switch and the LDAP server. The default ports are 389 (LDAP) or 636 (secure LDAP). • Ping the LDAP server from the console switch verify connectivity.
The HP IP Console Viewer does not work properly over a VPN connection, or from a remote site.	• Be sure that your default gateway and subnet mask is properly configured on the console switch. • Open (or forward) ports 2068, 8192, 3211, 161, 162, 389, and 636 through routers and firewalls between the HP IP Console Viewer and the console switch. • Ping the console switch from the client running the HP IP Console Viewer to verify connectivity.
SNMP Authentication Failure Traps are not being received.	Be sure that port 162 for UDP is open on your firewall. The SNMP Authentication Failure Traps are turned off by default in HP Systems Insight Manager. For more information, see the documentation included with HP Systems Insight Manager.

Upgrading the firmware

In this section

Using the file system to upgrade firmware 203
Using TFTP for firmware upgrades 204

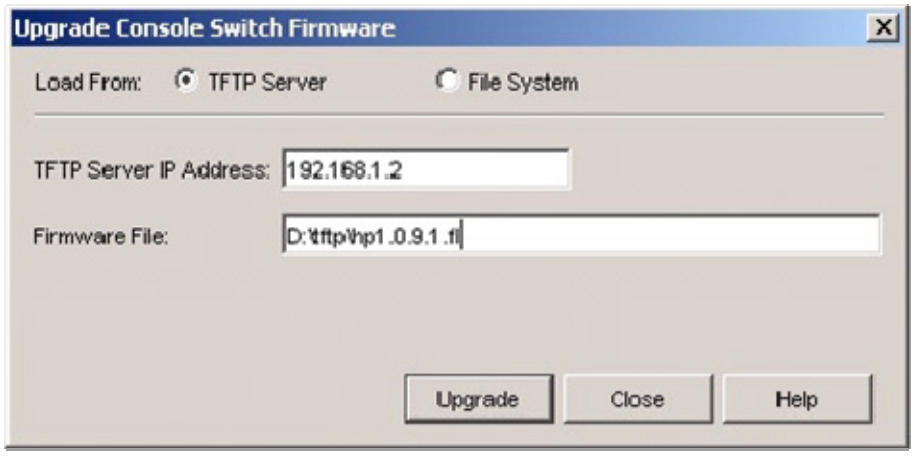
Using the file system to upgrade firmware

You can upgrade the console switch and serial console switch firmware by using the file system.

CAUTION: Do not power down the console switch while it is upgrading. This process can take up to 10 minutes to complete.

1. Select **Tools.**
2. Click **Upgrade Console Switch Firmware.** The Upgrade Console Switch Firmware dialog box appears.
3. Select **File System.**
4. Enter the firmware file name, or browse to the location where the firmware is located.

NOTE: If you made changes in the Settings tab of the Manage Console Switch window, but have not yet applied those changes before starting the upgrade, a warning message prompts you to confirm the upgrade because the upgrade process requires that the console switch be rebooted. If you do not apply the changes, they are discarded before upgrading the firmware.



5. Click **Upgrade.** The Upgrade button deactivates, and a progress message appears.

   When the transfer is complete, a message prompting you to confirm a reboot appears. The new firmware is not used until the console switch reboots.
6. Click **Yes** to reboot the console switch. The Upgrade Console Switch Firmware dialog box displays a progress message, eventually indicating that the upgrade and reboot are complete. Click **Close** to exit.

   -or-

   Click **No** to reboot at a later time.

Using TFTP for firmware upgrades

To upgrade the firmware using TFTP, you need a TFTP service application on the workstation or server that will be used to perform upgrades. After the TFTP has been enabled, then begin the upgrade.

Before beginning the upgrade procedure, be sure that the Secure TFTP Server is installed and that the GET access permissions for the folder that the updated file is in is selected. Also, be sure that the HP IP Console Switch is on the same network as the computer that is being used for the upgrade.

For Windows® operating systems, follow the instructions in the \TFTP\TFTP Install Instructions.txt file on the CD included with this kit or the Softpaq TFTP directory.

For Linux operating systems see "TFTP for Linux operating systems (on page 204)."

TFTP for Linux operating systems

For most systems using RPM packages, TFTP is provided by the TFTP server RPM (RPM-IVH/Redhat/RPMS/). Depending on the type of distribution, the Internet services daemon is provided by xinetd.

NOTE: The following Linux example uses Red Hat 3.0. For more information, refer to your Linux operating system's HELP or documentation.

NOTE: By default, TFTP executes in secure mode and only provides readable files under the /tftpboot directory. Other directories can be specified through the /etc/xinetd.d/tftp files. In secure mode, TFTP expects the file to be relative to the /tftpboot directory.

To enable TFTP for Linux operating systems (GNOME):

1. From the main menu, select **Programs>System>Service Configuration.**
2. In the Service Configuration menu, verify that the **xinetd** checkbox is selected to start at boot.

   -or-

   If the checkbox is not selected, select the checkbox, and click **Save.**
3. Find the TFTP in the list of services, and highlight it.
4. Select the checkbox to start TFTP at boot, and click **Save.**

To enable TFTP for Linux operating systems (KDE):

1. Go to the main menu, and select **Control Panel>Services.**
2. In the Service Configuration menu, verify that the **xinetd** checkbox is selected to start at boot.

   -or-

   If the checkbox is not selected, select the checkbox, and click **Save.**
3. Find TFTP in the list of services, and highlight it.
4. Select the checkbox to start TFTP at boot, and click **Save.**

Verifying TFTP for Linux operating systems

NOTE: The following Linux example uses Red Hat 3.0. For more information, refer to your Linux operating system's HELP or documentation.

1. Verify that `in.tftpd` service is running with the following `ps -ef | grep tftpd`.

   By default, the `/etc/xinetd.d/tftp` configuration files use `/tftpboot` as the directory.
2. Create a `/tftpboot` directory, if it does not exist, and set the permissions for public access.
3. Copy the firmware file to `/tftpboot`.

4. Change directory to `/tmp`.
5. From a shell prompt, enter `tftp localhost` (or the name of local system).
6. Download the file by entering the following command:

   `get /tftpboot/file name`
7. Enter `quit`.
8. From the shell prompt, verify that the file is in the `/tmp` directory.

If the TFTP was configured correctly, the preceding steps should transfer the file to the current directory.

Upgrading the firmware using TFTP on Linux operating systems

NOTE: The following Linux example uses Red Hat 3.0. For more information, refer to your Linux operating system's HELP or documentation.

To upgrade the firmware on Linux operating systems:

1. Connect one end of a serial cable to an available COM port on the server or workstation.
2. Connect the other end of the above serial cable to the serial port on the console switch.
3. Configure the terminal emulation software for the server, such as Minicom.

IMPORTANT: Minicom is a utility that is loaded during the installation of Linux. However, if you do not select the option to install the Linux Utilities during the operating system installation, you cannot use Minicom without downloading the Minicom X.X..i386.rpm file from the Red Hat website. (Refer to the procedure for installing RPMs from the Red Hat website.)

To configure Minicom:

a. Log on to a Linux console, or open a terminal and enter `minicom-s` at the command prompt. The Configuration menu appears.
b. Select **Serial Port Setup.** The Change which setting? menu appears.
c. Select **Option A (Serial Device).** Manually change the device type from "dev/modem" to "/dev/ttyS0," and press the **Enter** key.
d. Select **Option E (Bps/Par/Bits).** The Comm Parameters menu appears.
e. Select **E (Speed 9600 Bps),** and press the **Enter** key. The designation 9600 8 N1 appears next to Option E.
f. Select **Option F (Hardware Flow Control).**

   Be sure that the Change which setting? menu looks as follows:

   A—Serial Device: /dev/ttyS0

   B—Lockfile Location: /var/lock

   C—Callin Program:

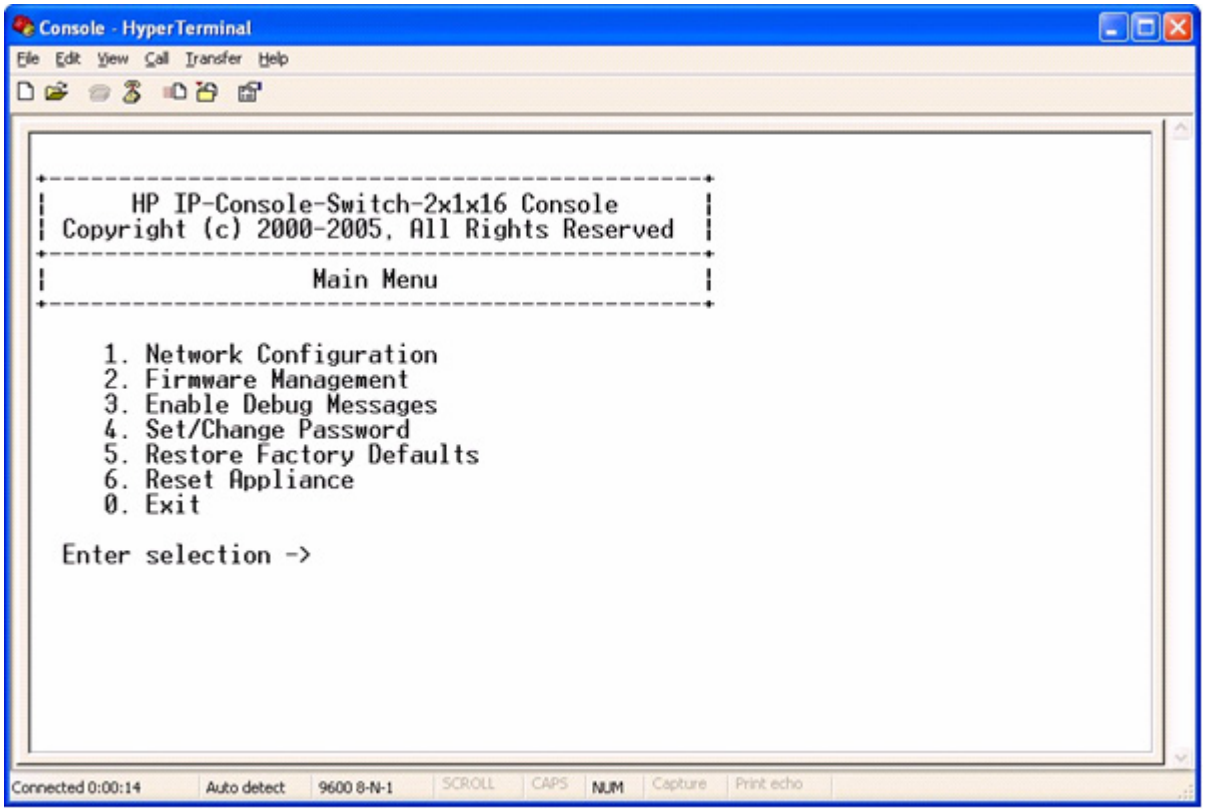
   D—Callout Program:

   E—Bps/Par/Bits: 9600 8 N1

   F—Hardware Flow Control: No

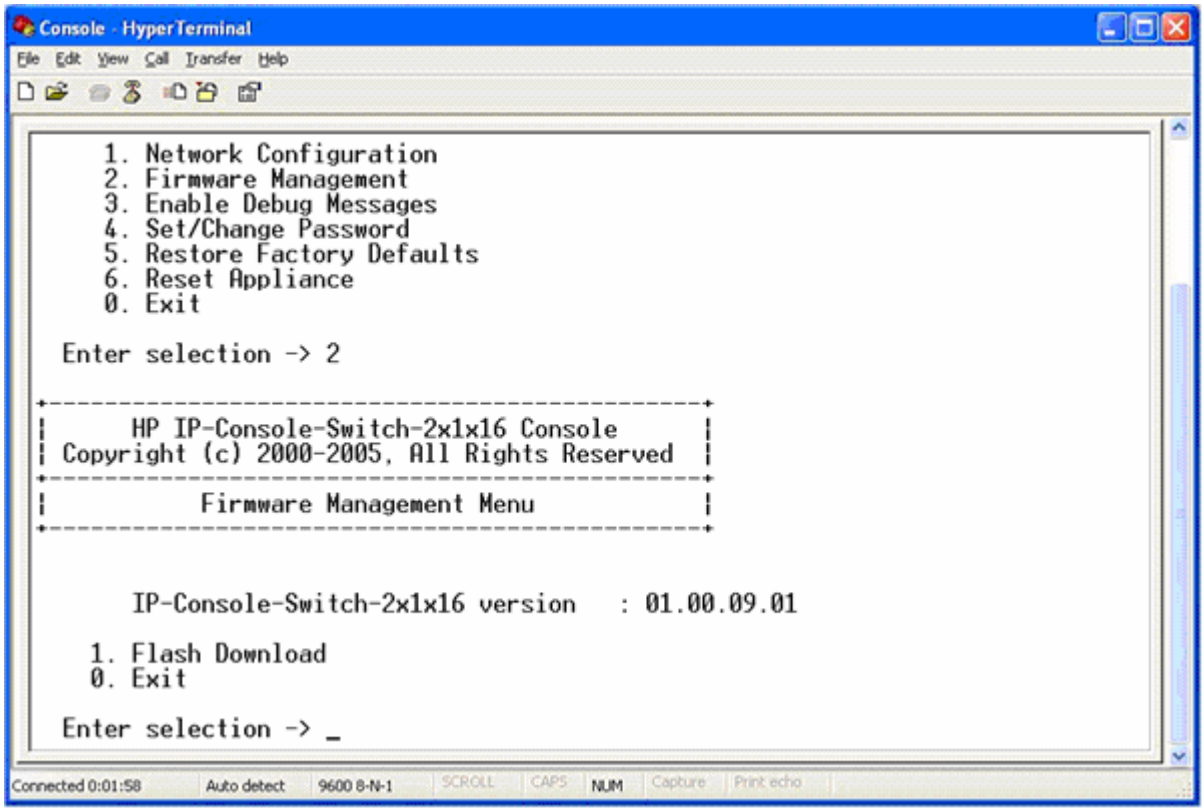
   G—Software Flow Control: No
g. Press the **Enter** key to return to the Confirmation menu. Scroll down to the **Save setup as dfl** option, and press the **Enter** key.
h. Scroll down the Configuration menu to the Exit from Minicom option, and press the **Enter** key.

i. From the Linux command prompt, enter `minicom`. As soon as a connection is established, the Main menu for the console switch appears. Follow the on-screen options to configure the console switch. The Main Menu with six options appears.



4. Plug the supplied power cord into the rear of the console switch and then into a valid power source, if not already connected.
5. Power on the console switch, if not already powered on. The activity indicator on the rear panel powers on. The activity indicator blinks for 30 seconds while performing a self-test. Approximately 10 seconds after it stops blinking, press the **Enter** key to access the main menu.

6. Select **Option 2—Firmware Management**. The Firmware Management menu appears.



7. Select **Option 1—Flash Download.**
8. Enter the IP address of the TFTP server that has the updated file and the exact path of the updated file (for example, C:\tftp\h3_0_0_english.fl).
9. Enter `Y` at the prompt to download the upgrade file from the given IP address. The console switch begins upgrading.

△ **CAUTION:** Do not cycle power to the console switch during this process. The update can take as long as 10 minutes. A loss of power might render the console switch inoperable and require that the unit be returned to the factory for repair.

When the upgrading process is complete, the console switch reboots. The console switch is ready.

HP IP Console Switch directory services integration setup tutorial

In this section

HP IP Console Switch directory service setup 208
Hardware configuration used for this example 208
Settings used for this example 209
Authentication and group-level access controls 209
Authentication only 220

HP IP Console Switch directory service setup

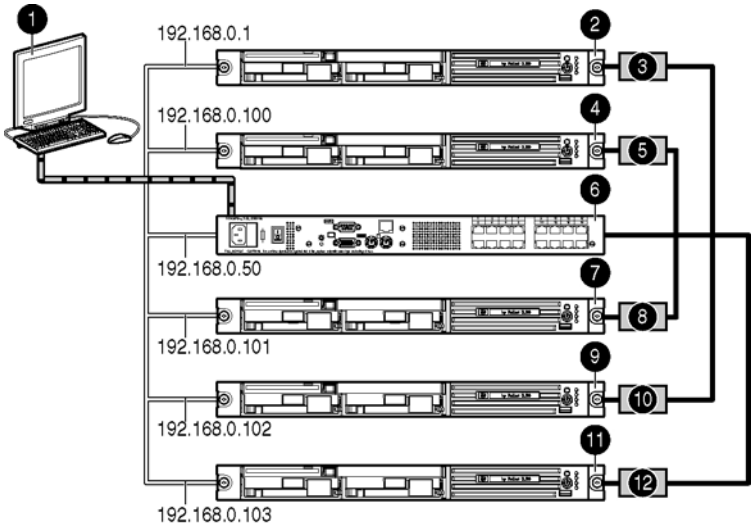
This section is intended as a tutorial to familiarize you with the LDAP directory functionality of the HP IP Console Switch. It walks you through the steps to set up an HP IP Console Switch to work with a Microsoft® Active Directory server in group attribute mode, in which users, interface adapters, and HP IP Console Switches are members of the same group, and authenticate only mode, in which the directory is used only to validate the use and access controls managed in the HP IP Console Switch. A mode to use for testing communications with the directory server is explained as well.

NOTE: The reader is expected to understand the concepts of LDAP directories and how to use Microsoft® Active Directory tools. This document is not intended to explain LDAP directories.

Hardware configuration used for this example

- HP IP Console Switch
- Windows Server™ 2003 Domain Controller
- Windows® workstation running the HP IP Console Viewer

- Servers connected to the HP IP Console Switch as target systems



Item	Description
1	Keyboard, video display, and mouse
2	Windows Server™ 2003 Domain Controller (Widget-AD)
3	Interface adapter (Widget-AD-IA)
4	Server (Brahms)
5	Interface adapter (Brahms)
6	HP IP Console Switch (Rack-10-KVM)
7	Server (Handel)
8	Interface adapter (Handel)
9	Server (Bach)
10	Interface adapter (Bach)
11	Windows Server™ 2003 HP IP Console Viewer (Vivaldi)
12	Interface adapter (Vivaldi)

Settings used for this example

- The Microsoft® domain controller acts as the DHCP server and DNS server in these examples.
- The domain is widget.com.
- The user account that is used to query the domain controller for authentication and access controls is consoleldap.
- The OU for grouping HP IP Console Switches and users is consoleswitches.

Authentication and group-level access controls

This procedure gives an example of how to use Active Directory for authentication and group-level access controls.

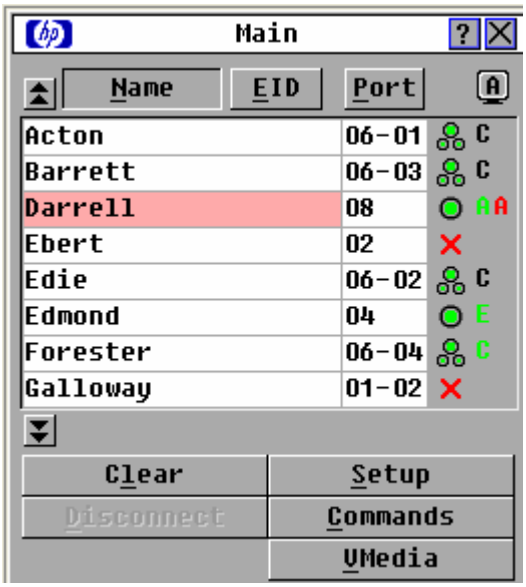
1. Name the interface adapters to match exactly the names of the computers with which they are connected. This must be done using the OSD from the local port PS2 and video connectors. The domain controllers interface adapters should have a different name than the domain controller. A

computer with the same name representing the domain controller should be added separately to the directory for console access because the domain controllers are not listed under computers in the Active Directory, and the domain controllers folder is not browsable to the Admin accounts.

In this example, the interface adapter for the domain controller Widget-AD is named Widget-AD-IA, and a computer is created with the name Widget-AD-IA. A standard user cannot authenticate for a domain controller.

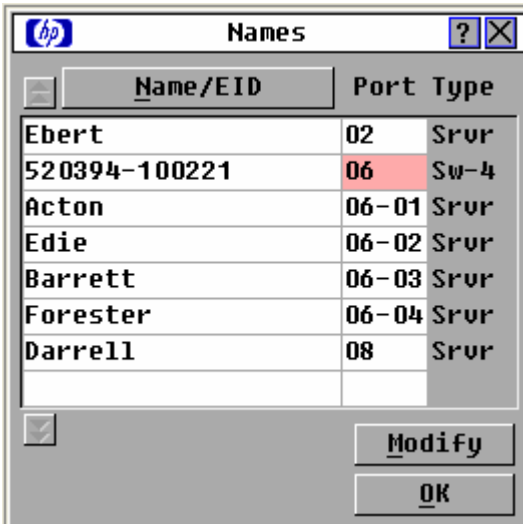
To name interface adapters:

a. From the local OSD, press the **Print Scrn** key. The Main dialog box appears.



b. Click **Setup>Names.** The Names dialog box appears.

c. Click the name you want to change, and click **Modify,** rename the interface adapter and click **OK.**

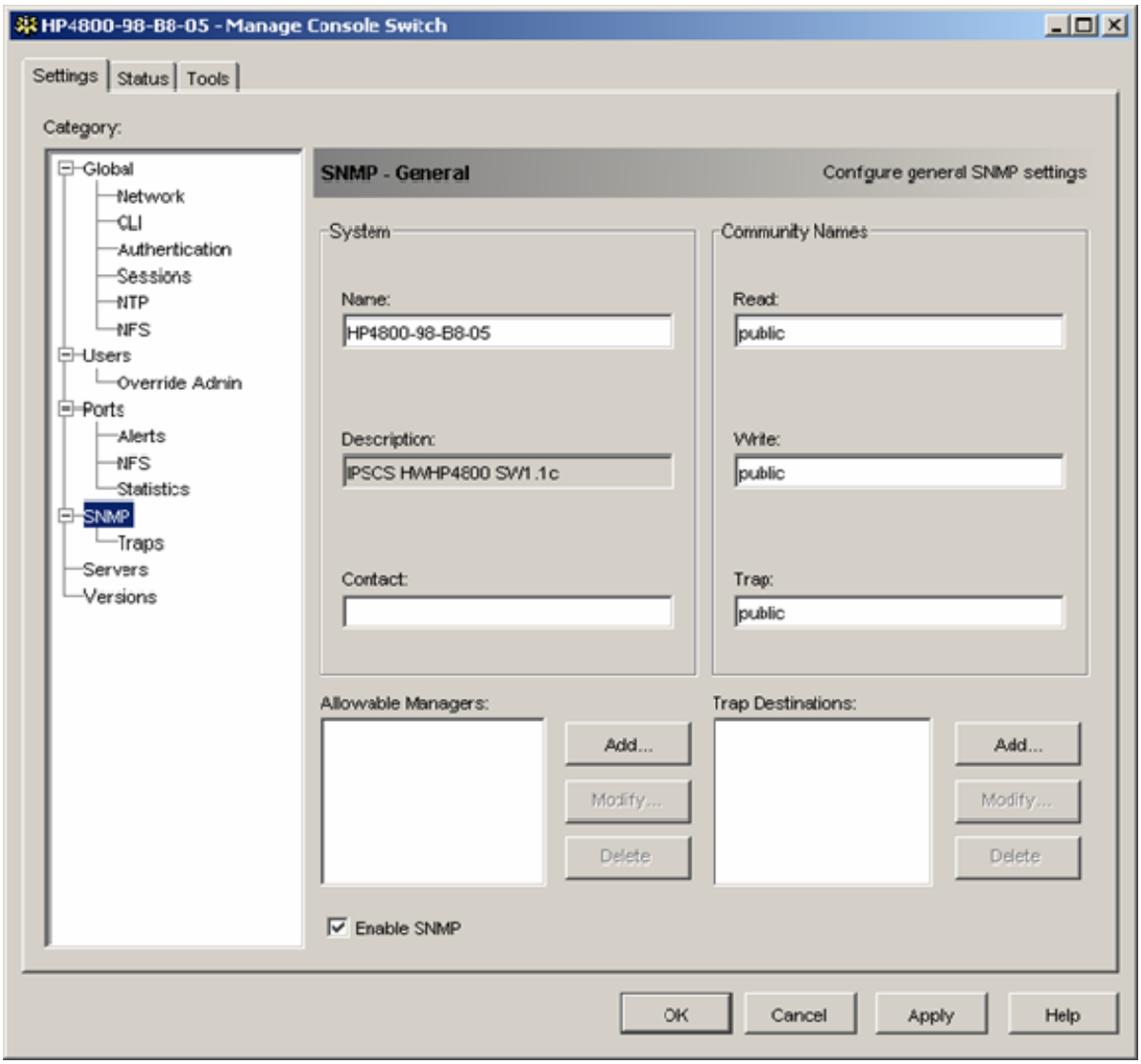


2. Install and launch the HP IP Console Viewer on a Windows® workstation that has network connectivity to the HP IP Console Switch.
3. Discover or manually add the console switch. For information on how to manually add or discover console switches, see "Adding and discovering console switches (on page 21)."
4. Access the console switch, and log in as admin with no password or with the admin-level user name and password of your console switch. For information on how to access the console switch, see "Accessing console switches (on page 34)."

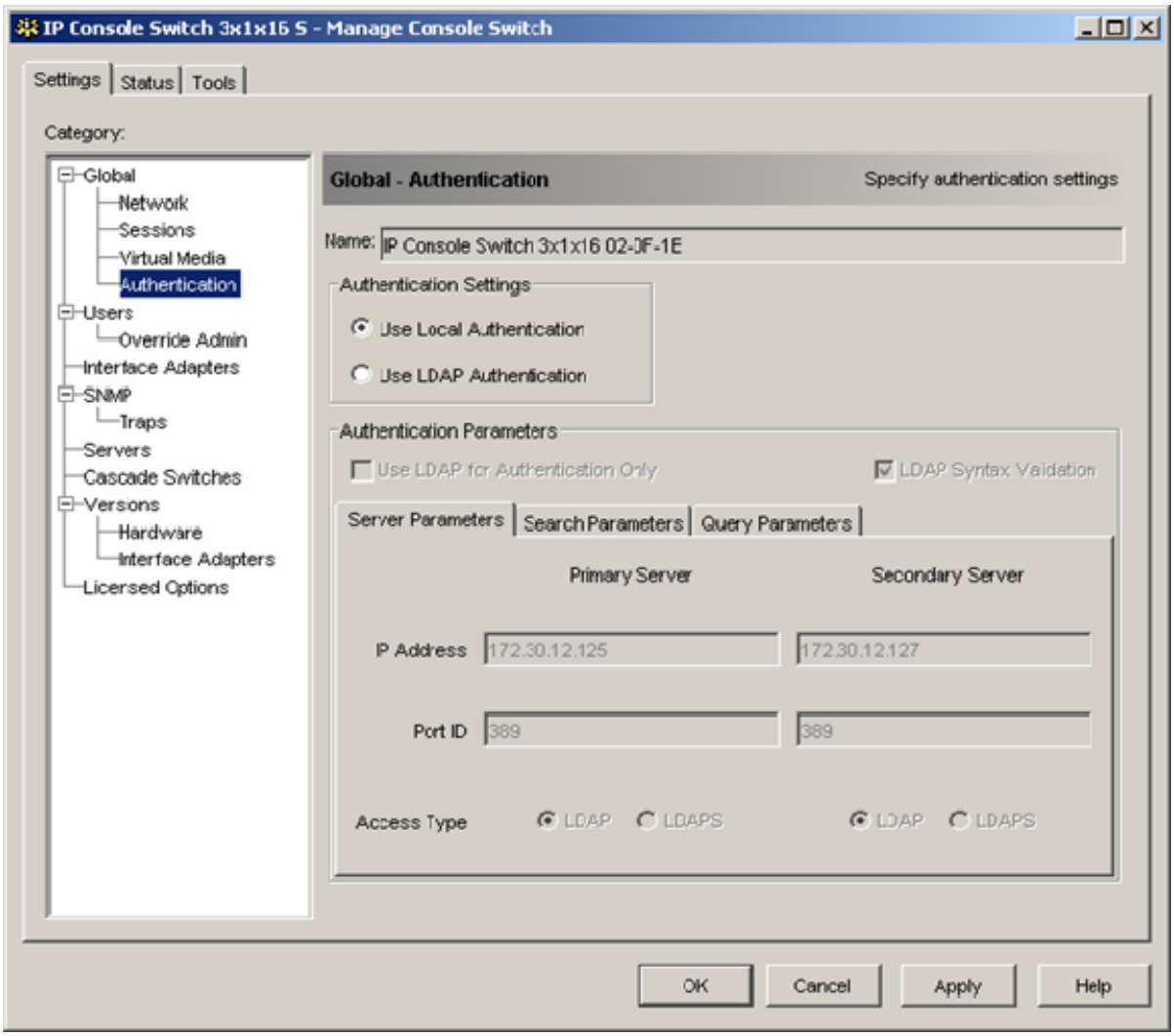
5. Name the HP IP Console switches from the HP IP Console Viewer using the Manage Console Switch window.

IMPORTANT: The HP IP Console Switch names must always be synchronized with the names used for associated computer account objects in the directory LDAP Directory Service. It is also important to note that active directory allows multiple computer accounts to have the exact same name, as long as each account is in a different domain from the others. When using the Group query mode, it is important to have precisely one account for each console switch and precisely one account for each attached server. If multiple accounts in the Active Directory forest are allowed to have the same name, unexpected failures can occur when using the Group query mode.

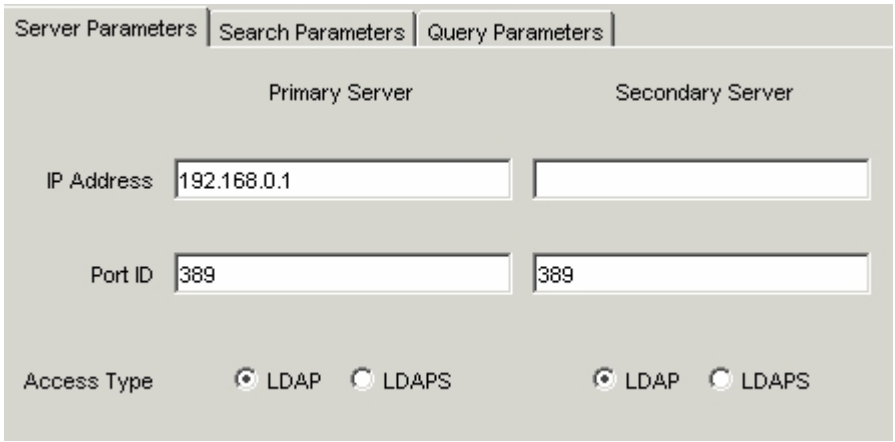
6. Select **SNMP** to change the console switch name. This name is displayed on the Authentication subcategory.



7. Select **Global>Authentication.**



8. Enable LDAP on the HP IP Console Switch.
   a. Click **Use LDAP Authentication.**
   b. On the Server Parameters tab, enter the IP address of the **Primary Server** (domain controller).



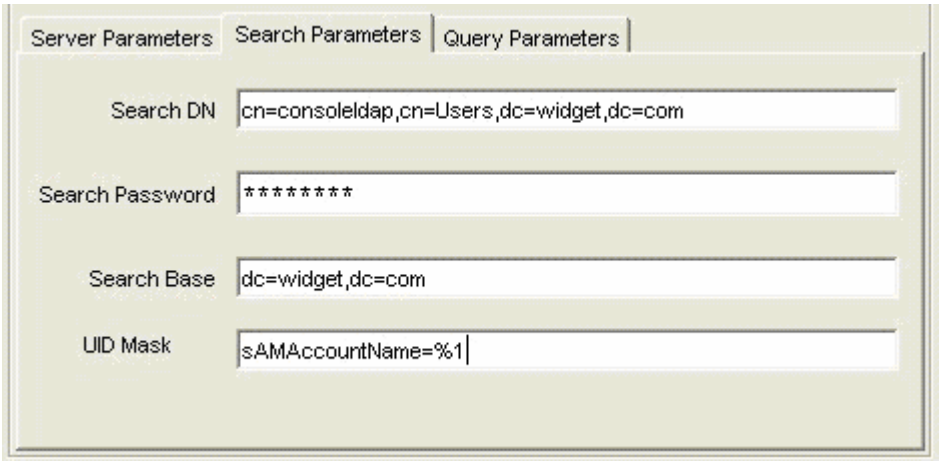
   c. On the Search Parameters tab, enter the Search DN:
   `cn=consoleldap,cn=users,dc=widget,dc=com`

NOTE: The first cn field must match the full name of the user, not the login name. For example, if the user name is John Doe, then *cn=John Doe* (note the space in the name).

d. Enter the search password for the consoleldap user account.

e. Enter the search base: `dc=widget,dc=com`.

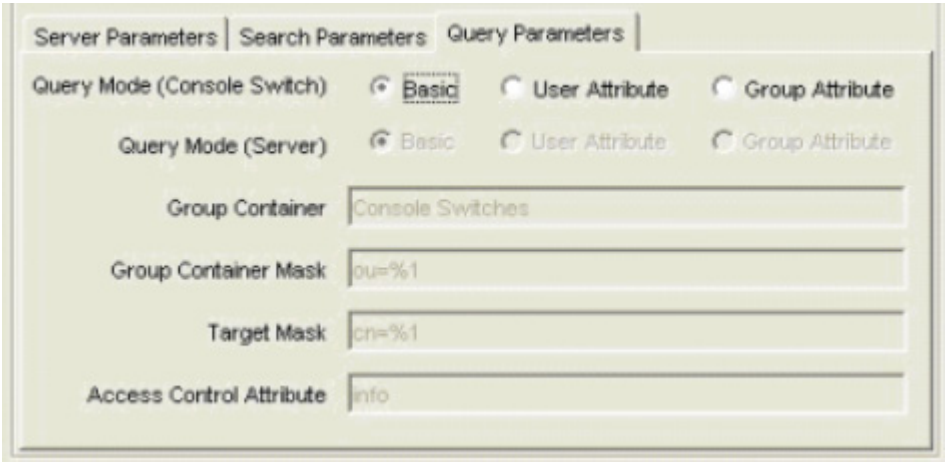
NOTE: The search base should always be at the root of the domain.



f. On the Query Parameters tab, click **Basic** for Query Mode (Console Switch) and **Basic** for Query Mode (Server).

g. Apply the settings.

NOTE: This query mode is used for testing and troubleshooting, but it should not be used in a production environment. After the basic LDAP communication is tested successfully, change the query mode.



NOTE: In a production environment, work with your IT department to create the console query user account and add the console switches OU. You need a level of access that enables you to create, delete, modify groups, and add computer objects for interface adapters connected to non-domain systems within the console switches OU. Use the Microsoft® MMC to access the Active Directory from another server or a client workstation.

To administer the directory from the domain controller console, click **Start>Programs>Administrative Tools>Active Directory Users and Computers.**

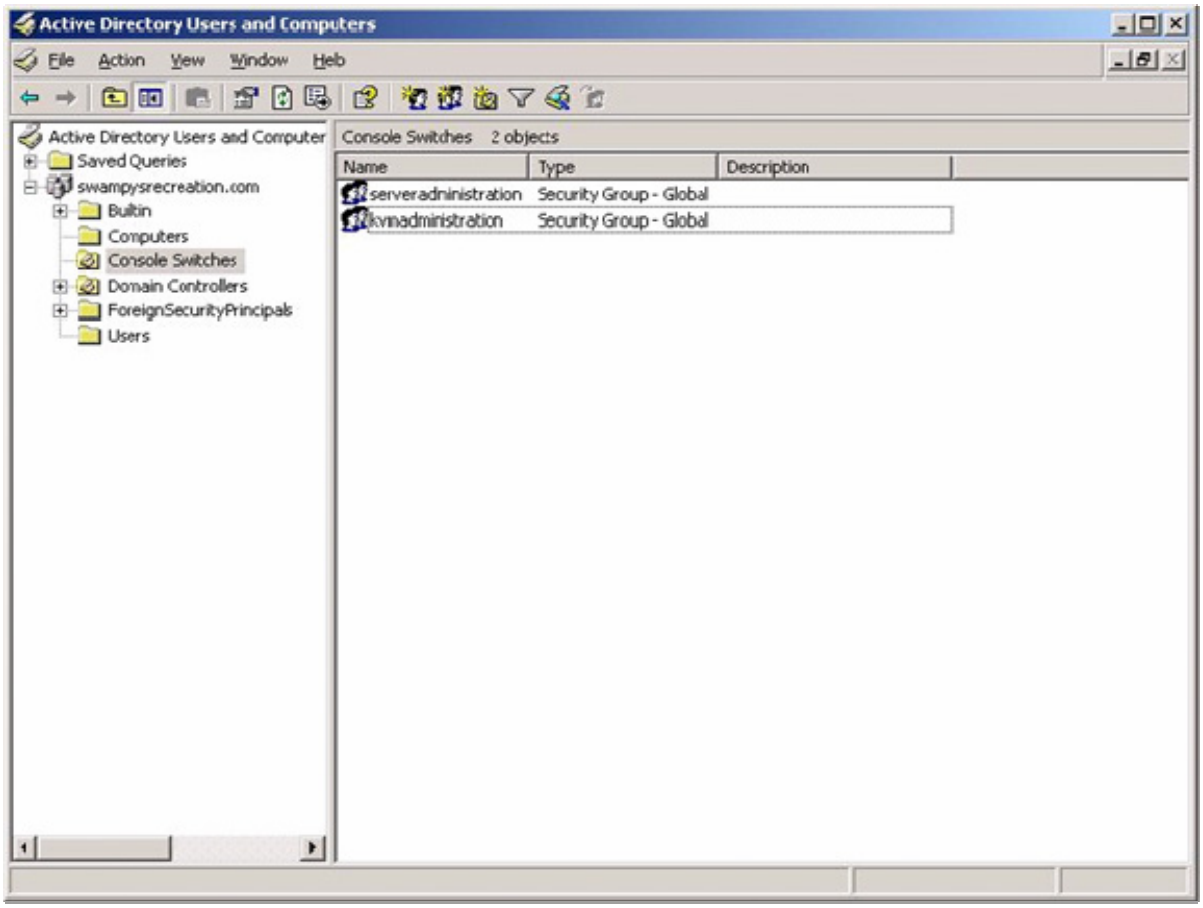
-or-

To use MMC from another Windows Server™ 2003:

- Click **Start>Run>enter MMC.**
- From MMC, click **File>Add/Remove Snap-in.**
- Add **Active Directory Users and Computers.**
- Close **Add/Remove Snap-in** and click **OK.**
- From Active Directory User and Computers, highlight **Add Users and Computers.**
- Click **Action>Connect to Domain.** The domain list appears.

9. On the domain controller, add an OU group container named CONSOLESWITCHES to Active Directory in the root of the domain for the console switch administrative groups.
   a. Right-click **widget.com.**
   b. Select **New Organizational Unit.**
   c. Name it CONSOLESWITCHES.
   d. Click **OK.**

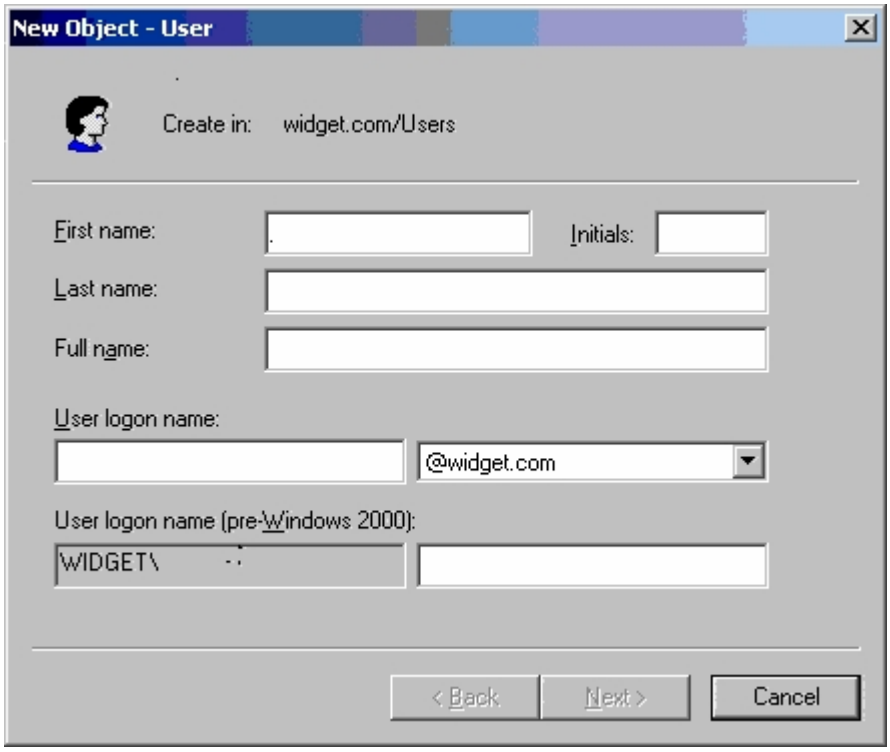
NOTE: When using the Group Query Mode, the OU object used at the Group Container must be located in the domain that is used as the Search Base. The Relative Distinguished Name of the Group Container is configured in the Group Container field of the Authentication subcategory. The Distinguished Name of the Search Base is also configured in the Authentication subcategory. If the Group Container is located outside the domain used as the Search Base, all attempts to launch a console switch session or manage a console switch fail.



10. Create a user named consoleldap, and assign a password.
    a. Select **User>New>User.**
    b. Follow the wizard.

c. Set the password to not expire.

d. Click **Finish.**

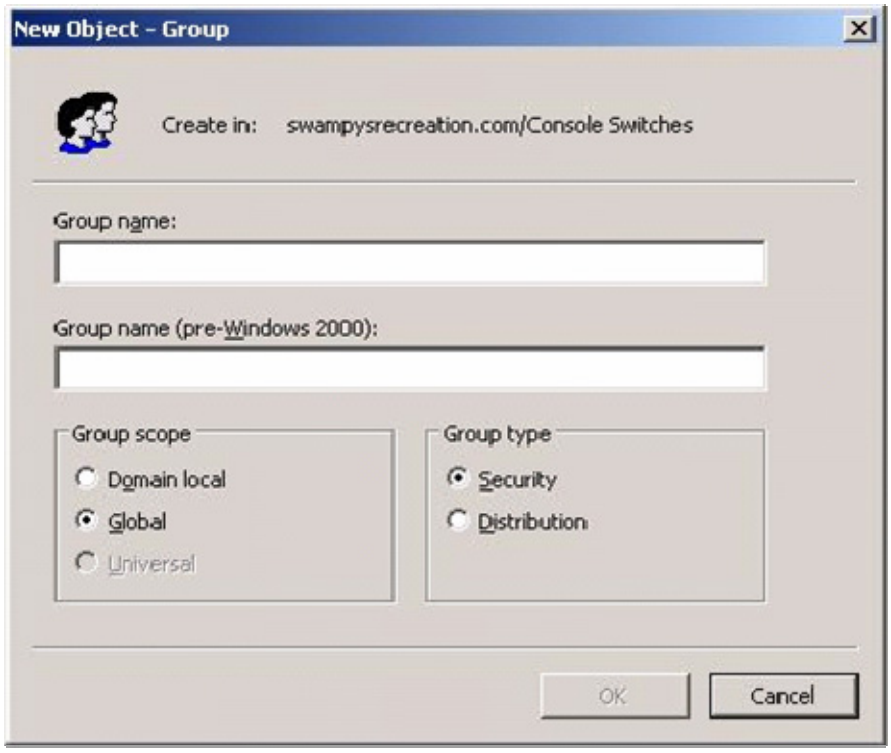


11. Create two groups for console switch administrators and users.

a. Right-click **CONSOLESWITCHES OU.**

b. Choose **New Group.**

c. Create groups names ConsoleSwitchAdministration and ServerAdministration.

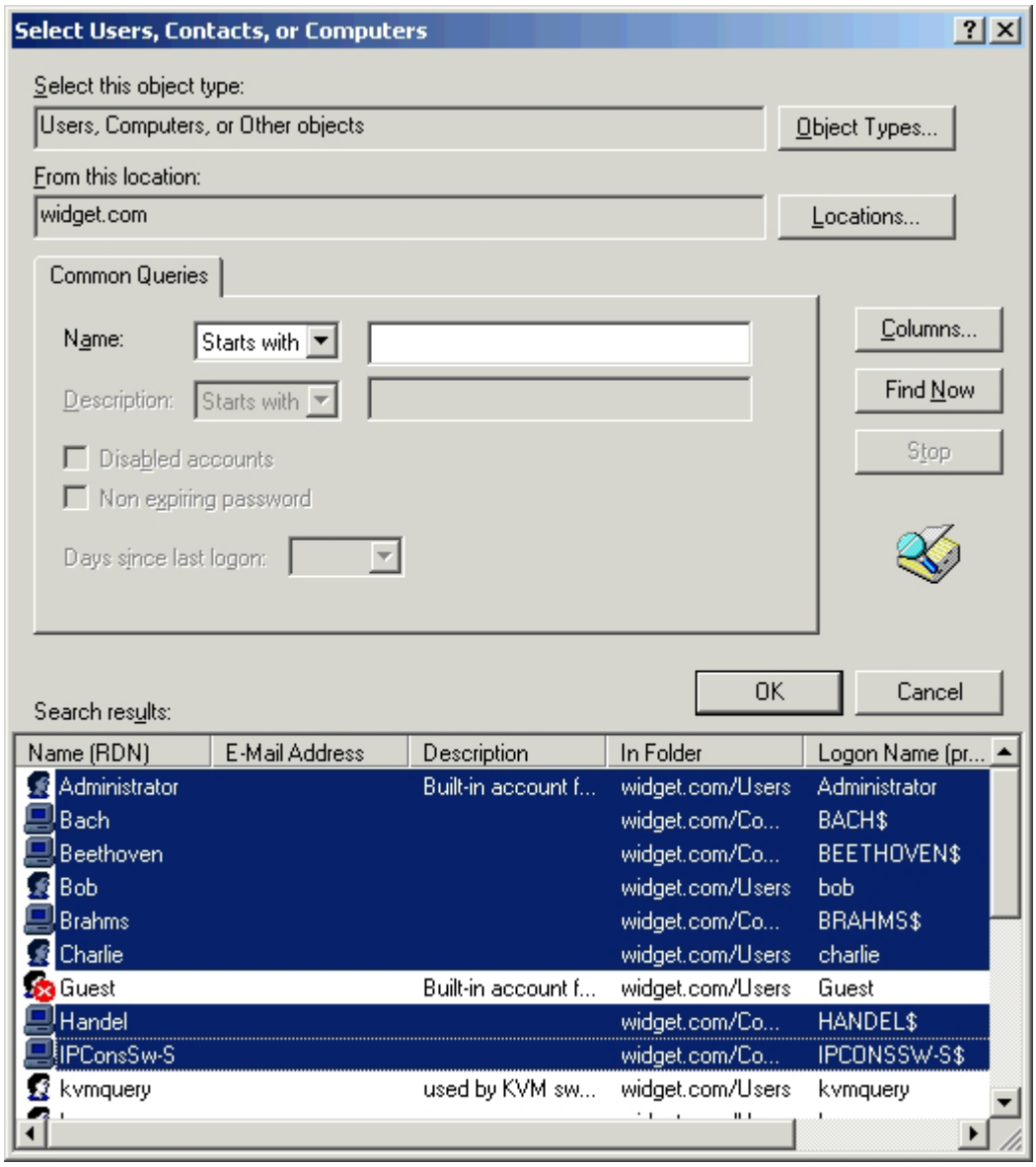


NOTE: In a production environment, groups in the Active Directory console switches OU would match the organization's hierarchy, usually by function, geography, or a combination.

- Set up the default access control for the Server Administration group by right-clicking the group object and selecting **Properties** for the group and entering `KVM User` and `Serial User` in the group's notes field.
- Set up the default access control for the Console Administration group by right-clicking **Properties** for the group and entering `KVM Appliance Admin` in the group's notes field.

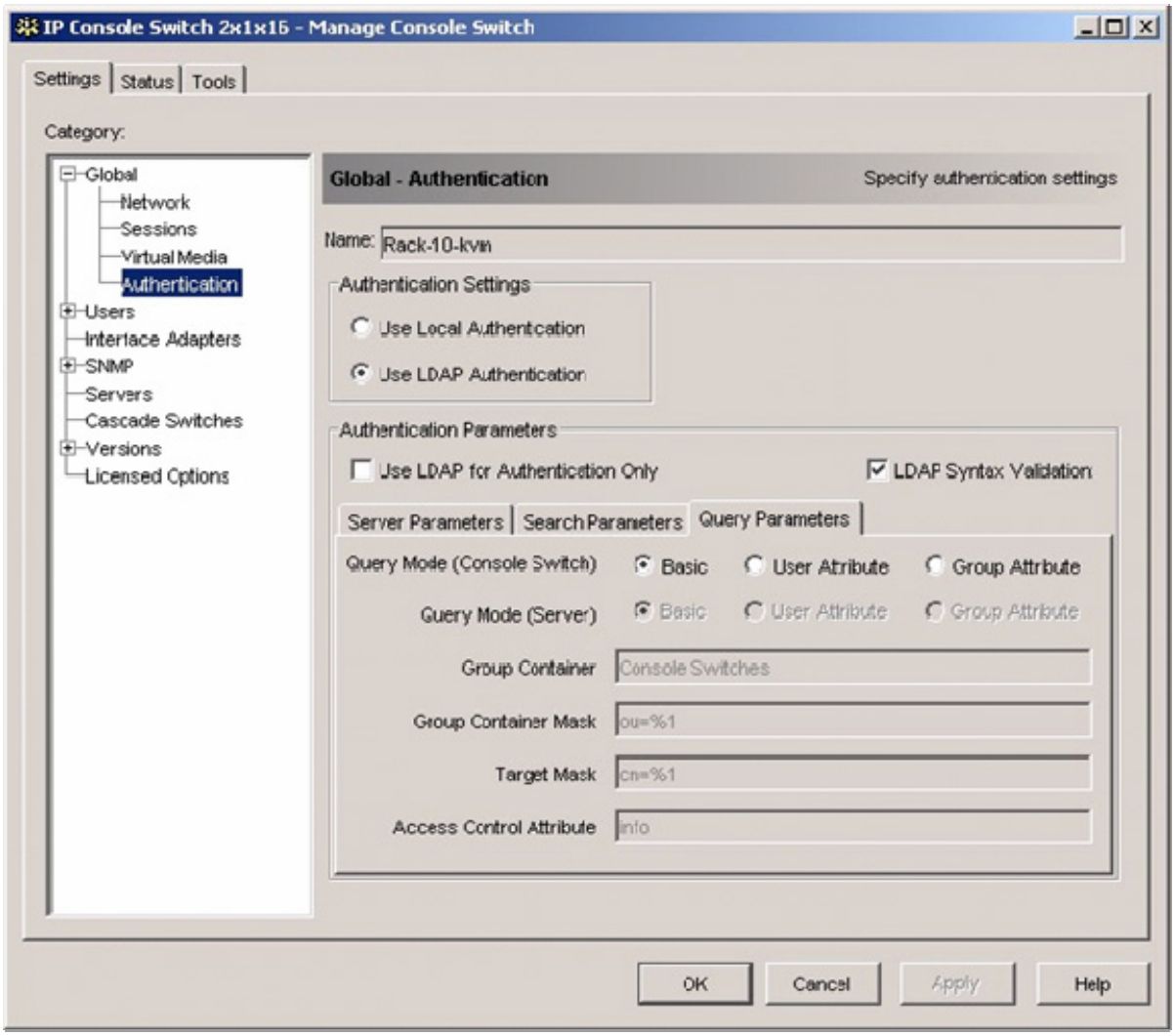
12. Add the users and interface adapters to the appropriate groups that associate them.
    a. Right-click each of the two new groups.
    b. Click **Properties.**
    c. Click the **Members** tab.
    d. Click **Add.**
    e. Click **Object Types.**
    f. Select **Computers and Users.**
    g. Click **OK.**
    h. Click **Advanced>Find Now.**
    i. Add the computer and users that should belong together in the group by clicking the first object holding the **Ctrl** key while clicking the others.

j. Click **OK.**



13. From HP IP Console Viewer, log in to the HP IP Console Switch from the HP IP Console Viewer.
    a. Click **Global>Authentication.**
    b. On the Query Parameters tab, click **Basic for Query Mode (Console Switch)** and **Basic for Query Mode (Server).**

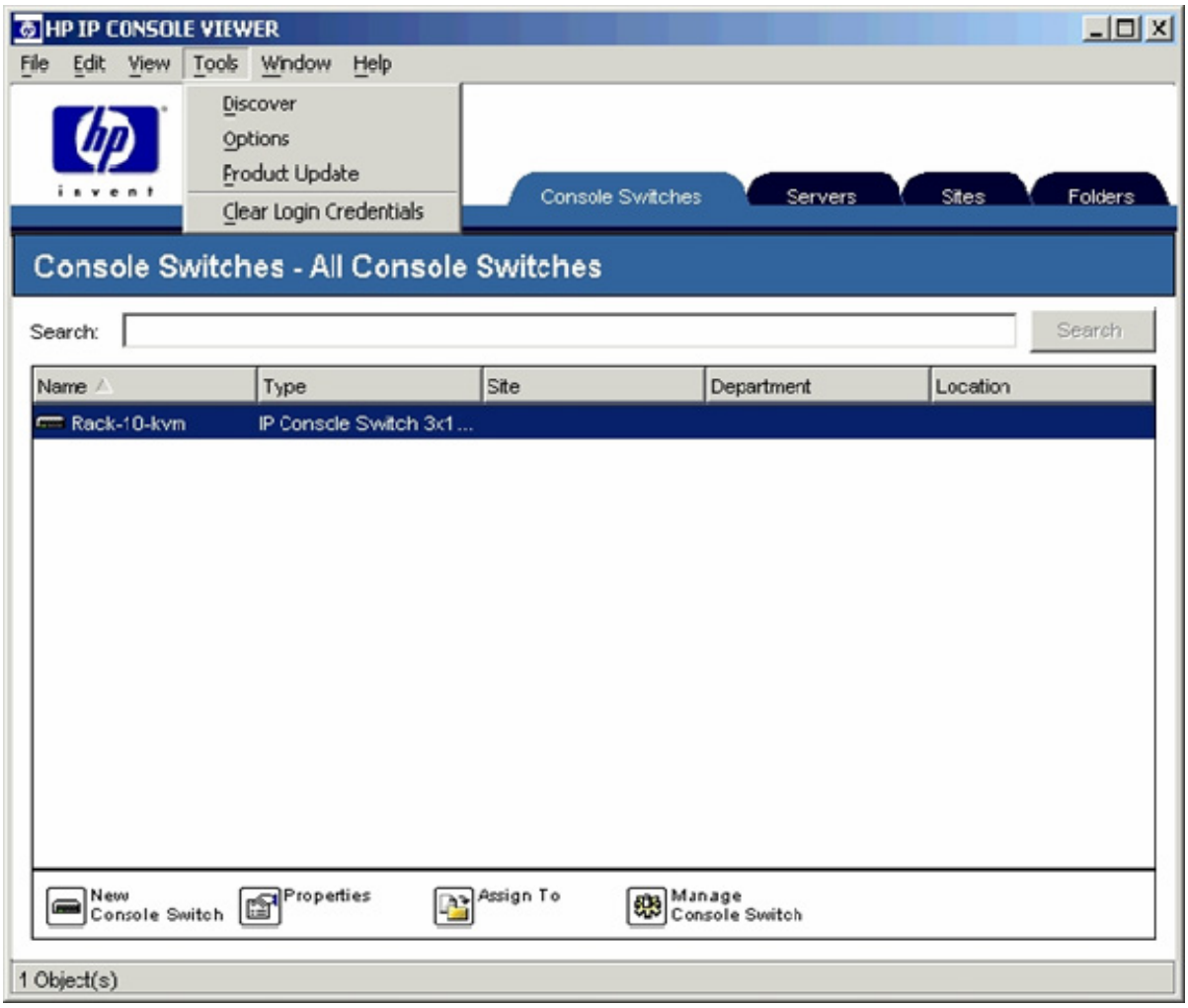
IMPORTANT: This query mode should be used to test your LDAP configuration only. After the basic LDAP communications configuration is successfully tested, change the query mode because Basic mode gives full administration authorization to all console switches and all attached servers.



14. Test the LDAP communications from the HP IP Console Viewer.
    a. Click **Tools>Clear Login Credentials.**

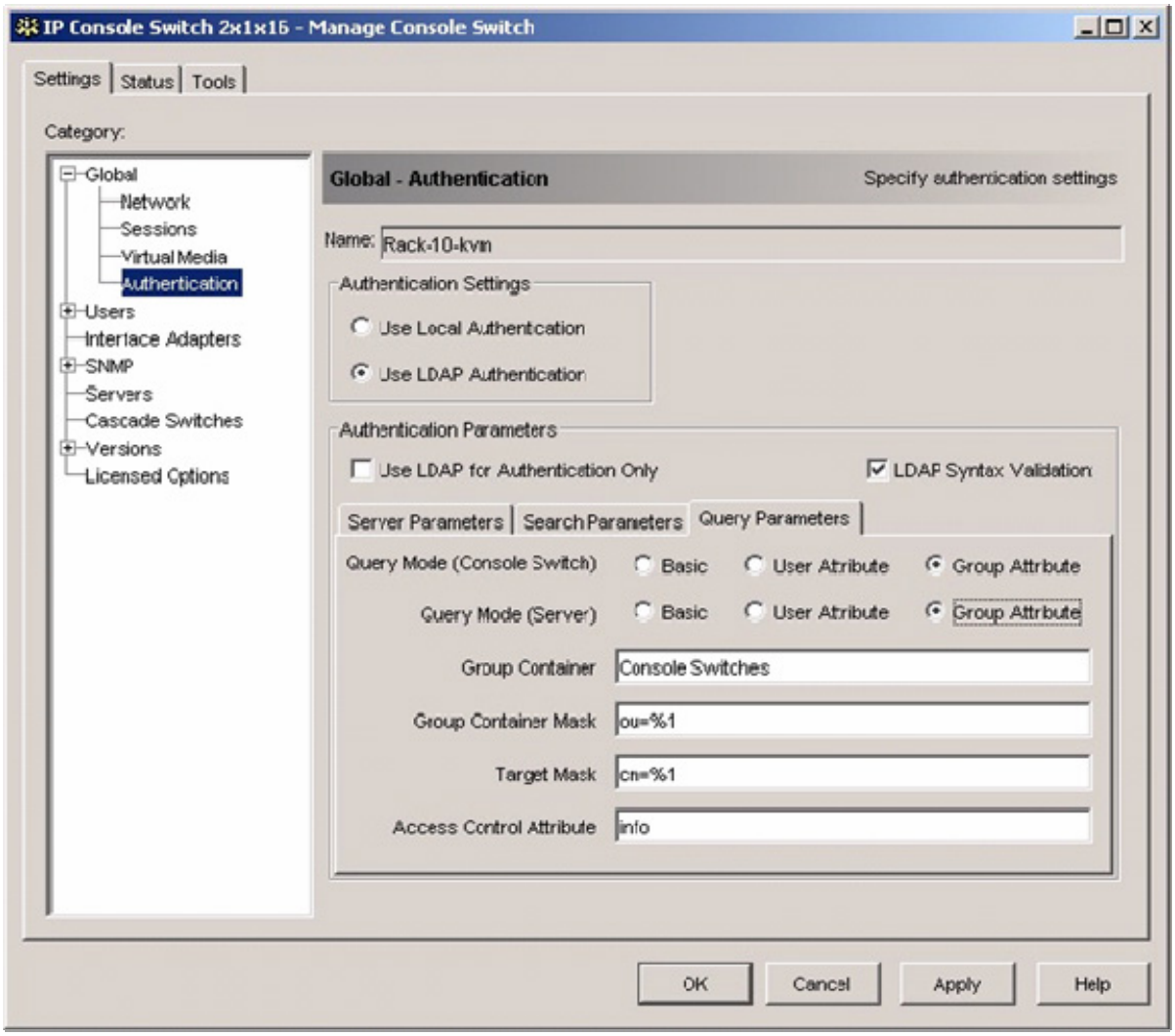
IMPORTANT: Perform this step each time you want to test authentication of a user to a target system.

b. Choose a server previously added to the directory as a computer to one of the groups, and log in as user from the same group.



15. After the basic LDAP communication test succeeds, log in to the HP IP Console Switch from the HP IP Console Viewer.
    a. Click **Global>Authentication.**
    b. On the Query Parameters tab, click **Group Attribute for Query Mode (Console Switch)** and **Group Attribute for Query Mode (Server).**

16. Enter the Group Container CONSOLESWITCHES and test again.



Authentication only

This procedure gives an example of how to use Active Directory for authentication only.

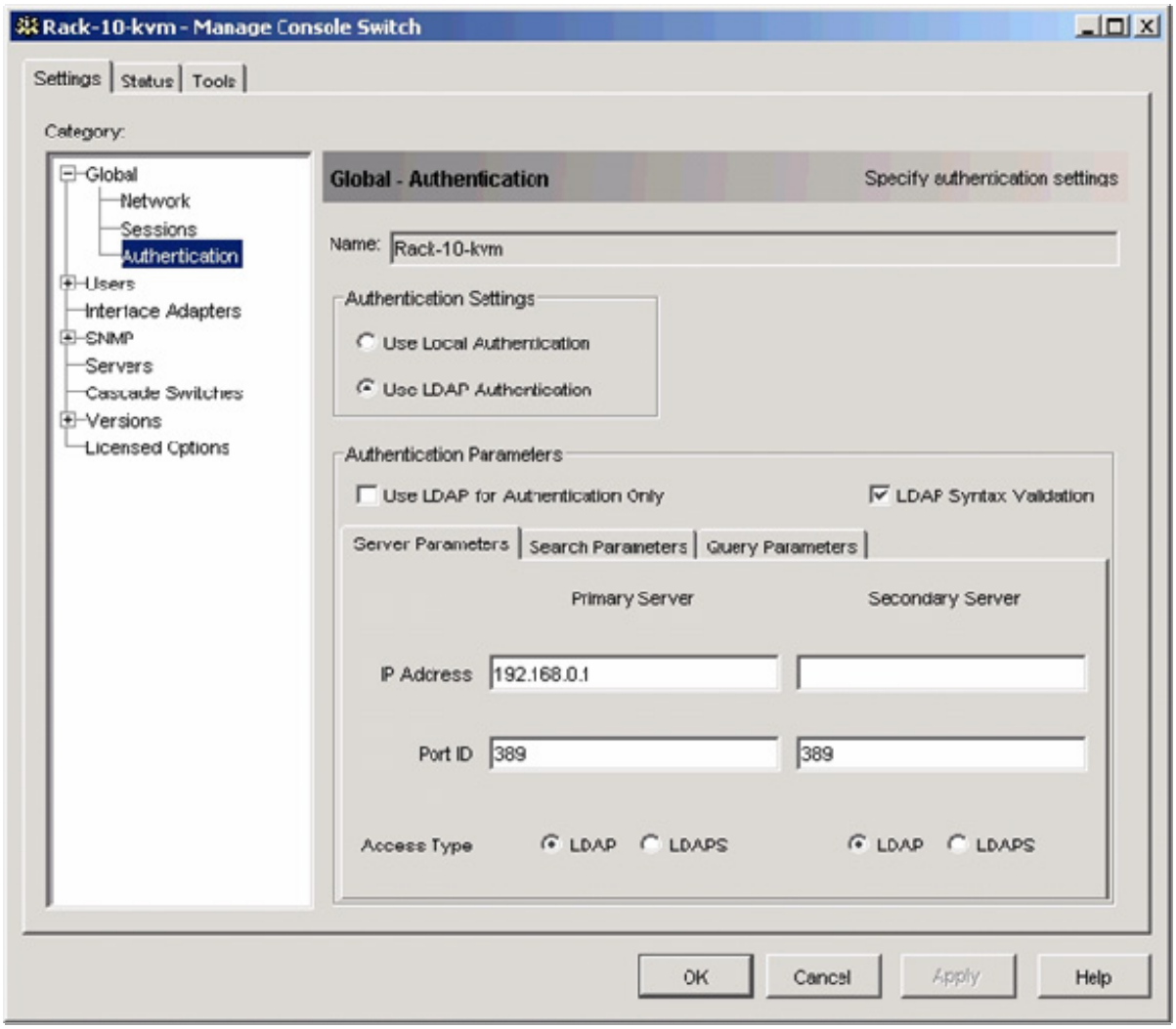
1. Perform steps 2 through 10 from the procedure in "Authentication and group-level access controls (on page 209)."
2. Enable LDAP, if necessary.
3. Select **Use LDAP Authentication Only.**
4. Create user accounts locally in the console switch.

IMPORTANT: The console switch user names must match exactly with their user logon name in Active Directory.

5. Set the access controls for the user locally on the console switch.
6. Test the LDAP communication from the HP IP Console Viewer application.
7. Select **Tools>Clear Login Credentials.**

IMPORTANT: Perform this step each time you want to test authentication of a user to a target system.

8. After the basic LDAP communication test succeeds, log in to the console switch from the HP IP Console Viewer.
   a. Select **Global>Authentication.**
   b. Select **Use LDAP for Authentication Only.** The fields on the Query Parameters tab are deactivated when this box is selected.



9. Apply the settings.
10. Test again.

LDAP client behavior overview

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UID mask for multiple factor credentials 236

UID masks (simple and complex)

The client application login dialog enables you to enter two fields, labeled User name and Password. Before the HP IP Console Viewer was enhanced with support for directory services integration (LDAP), the product supported only one form of authentication, which used an internal database. Therefore, there was no ambiguity about the use of these two fields because the internal database supports only one form of user name. However, Active Directory supports many types of attributes that could sensibly be used as credentials for the purposes of authenticating the user of the client application. After an administrator chooses which Active Directory attributes to use as credentials, the choice is implemented using a feature of the HP IP Console Switch called the UID Mask. This flexibility engenders several questions:

- What are the Active Directory attributes that could sensibly be used as credentials?
- How does the value of each of those attributes get set in Active Directory?
- How is the UID mask in the Manage Console Switch window used to implement a customer's choice of credentials?

These questions are addressed in the following subsections.

Active Directory attributes that can be used as credentials

Several attributes that are candidates for use as credentials are defined when a new user account is initialized in Active Directory. Other candidates are found in the Properties dialog for user objects in Active Directory. In addition, other candidates are available but not readily accessible in the default Properties dialog for user objects. For these attributes, it is necessary to use an Active Directory tool, such as ADSI Editor, to access the attribute and set its value.

Attributes initialized during creation of a new user object

When a new object is created in Active Directory to represent a user, the dialog presented by Active Directory enables values to be set for the following attribute types:

- First Name
- Initials
- Last Name
- Full Name
- User Logon Name
- User Principal Name

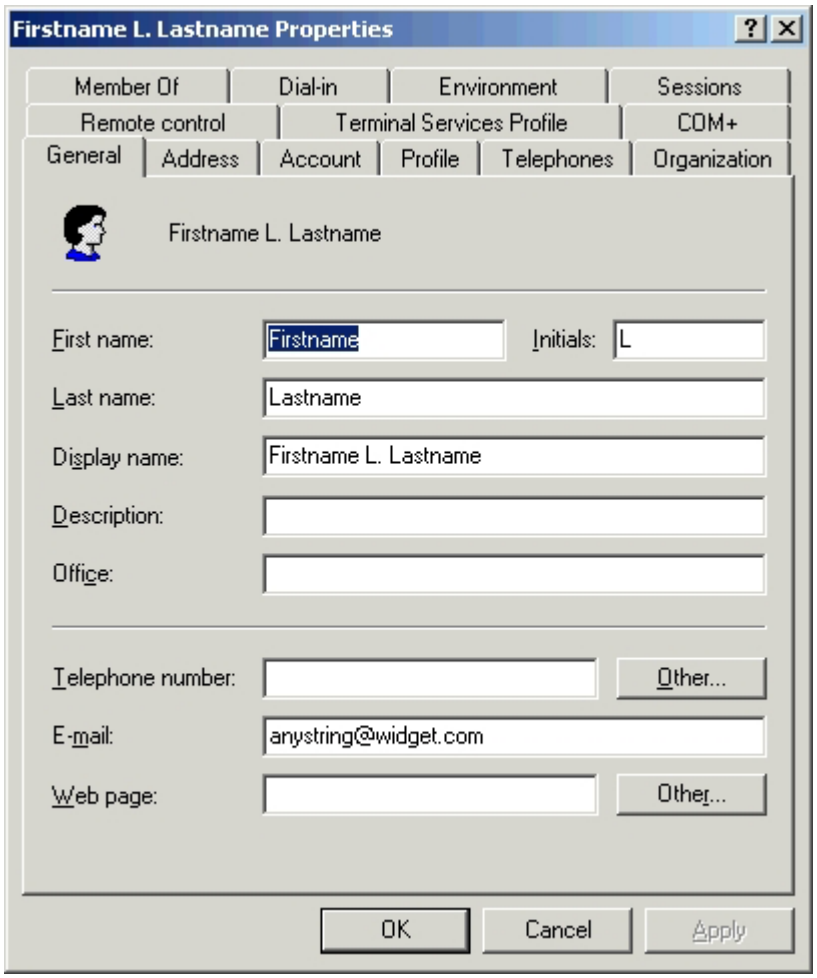
NOTE: This attribute is not explicitly labeled in the dialog used to create a new user object.

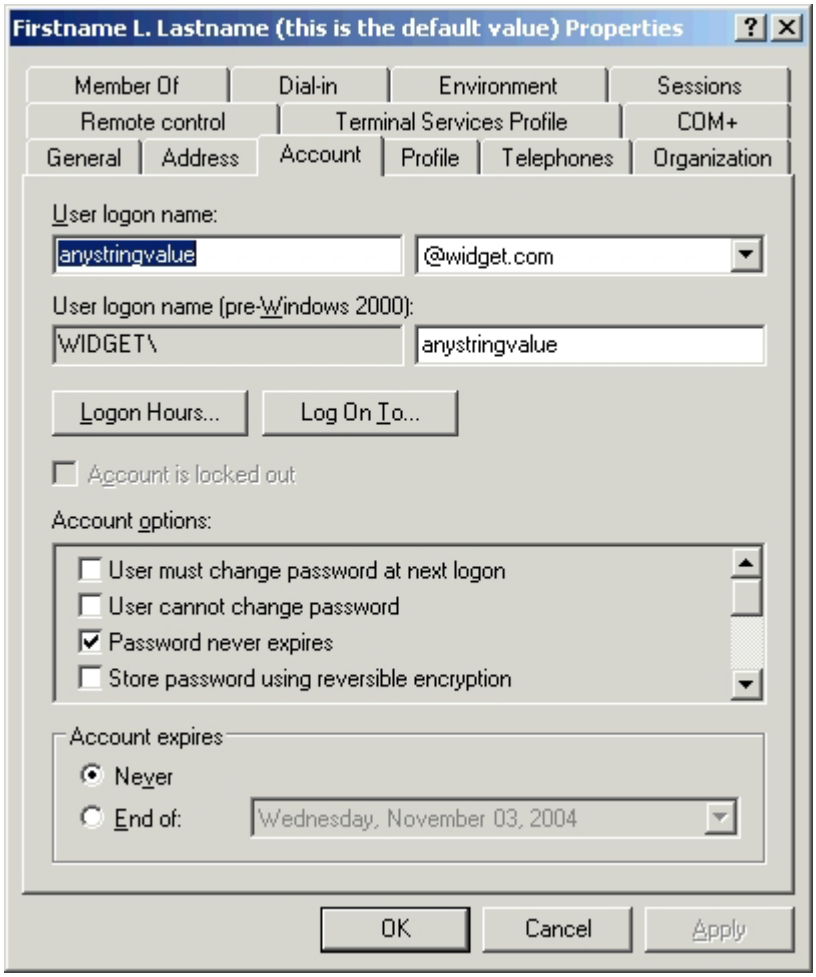
- User Logon Name (pre-Windows® 2000)

When a new object is created, the values entered for each of these fields is stored in a specific attribute type within the object. In some cases, a value gets stored in more than one attribute. Some of the values are subsequently available for viewing and modification in the Properties dialog. The following table shows these relationships and others.

Field label in new object-user dialog	Field label in user properties	Active Directory attribute type	Comments
First Name	First Name	givenName	
Initials	Initials	initials	
Last Name	Last Name	sn	sn stands for surname.
Full Name	Display Name	DisplayName cn	The full name is stored in two Active Directory attributes:displayName and cn. cn stands for Common Name.
User Logon Name	User Logon Name	sAMAccount Name	This name is also used in pre-Windows® 2000 logon name. However, the pre-Windows® 2000 logon name might not be stored as an attribute, depending on the mode used to create the Active Directory domain (Native mode compared to Mixed mode).
Displayed but not labeled	Displayed but not labeled	userPrincipal Name	The default value for the UPN attribute has the form: <sAMAccountName>@<domain> This default value can be modified by replacing the sAMAccountName with any string of alphanumeric characters and can include: • Period (.) • Forward slash (/) • Backward slash (\) • Pound (#) • Dollar ($) • Hat (^) • Horizontal bar (|) • Minus (-) • Plus (+) The default domain can also be replaced with the name of any domain that is superior to the domain in which the object is being created.
- - - - -	E-mail	mail	
- - - - -	- - - - -	employeeID	Accessed by LDAP tool, such as ADSI Editor.

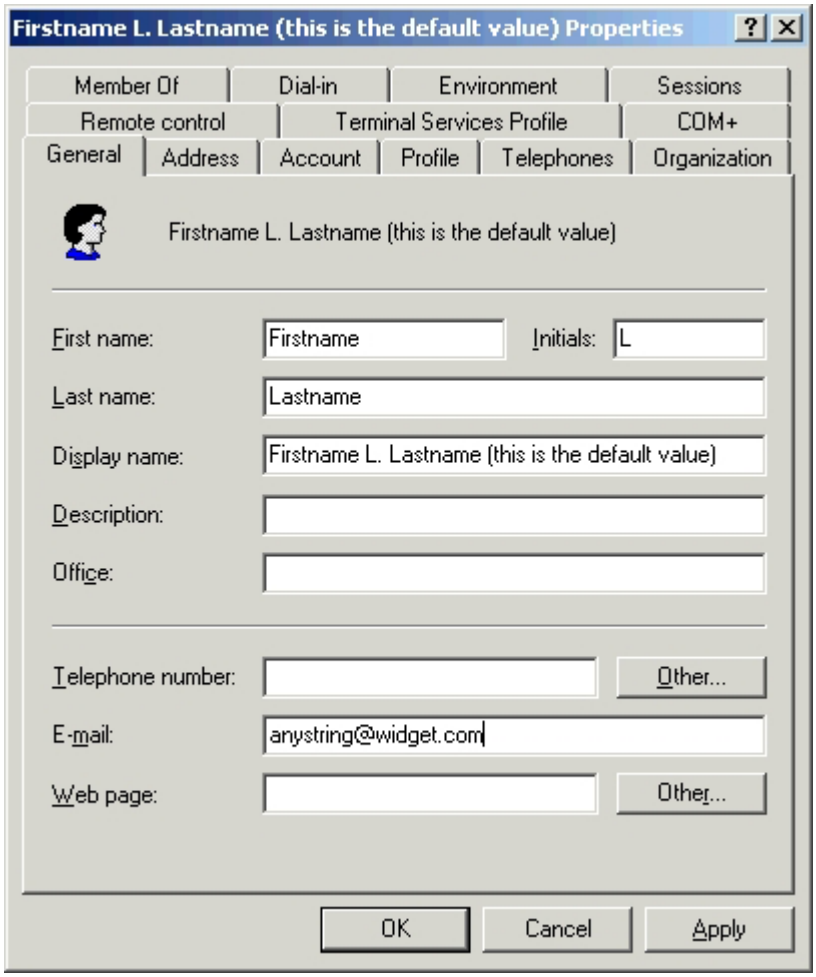
As an example, consider the following instance of the New Object-User dialog.




Firstname L. Lastname (this is the default value) Properties
Member Of
Dial-in
Environment
Sessions
Remote control
Terminal Services Profile
COM+
General
Address
Account
Profile
Telephones
Organization
User logon name:
anystringvalue
@widget.com
User logon name (pre-Windows 2000):
WIDGET\
anystringvalue
Logon Hours...
Log On To...
Account is locked out
Account options:
User must change password at next logon
User cannot change password
Password never expires
Store password using reversible encryption
Account expires
Never
End of:
Wednesday, November 03, 2004
OK
Cancel
Apply

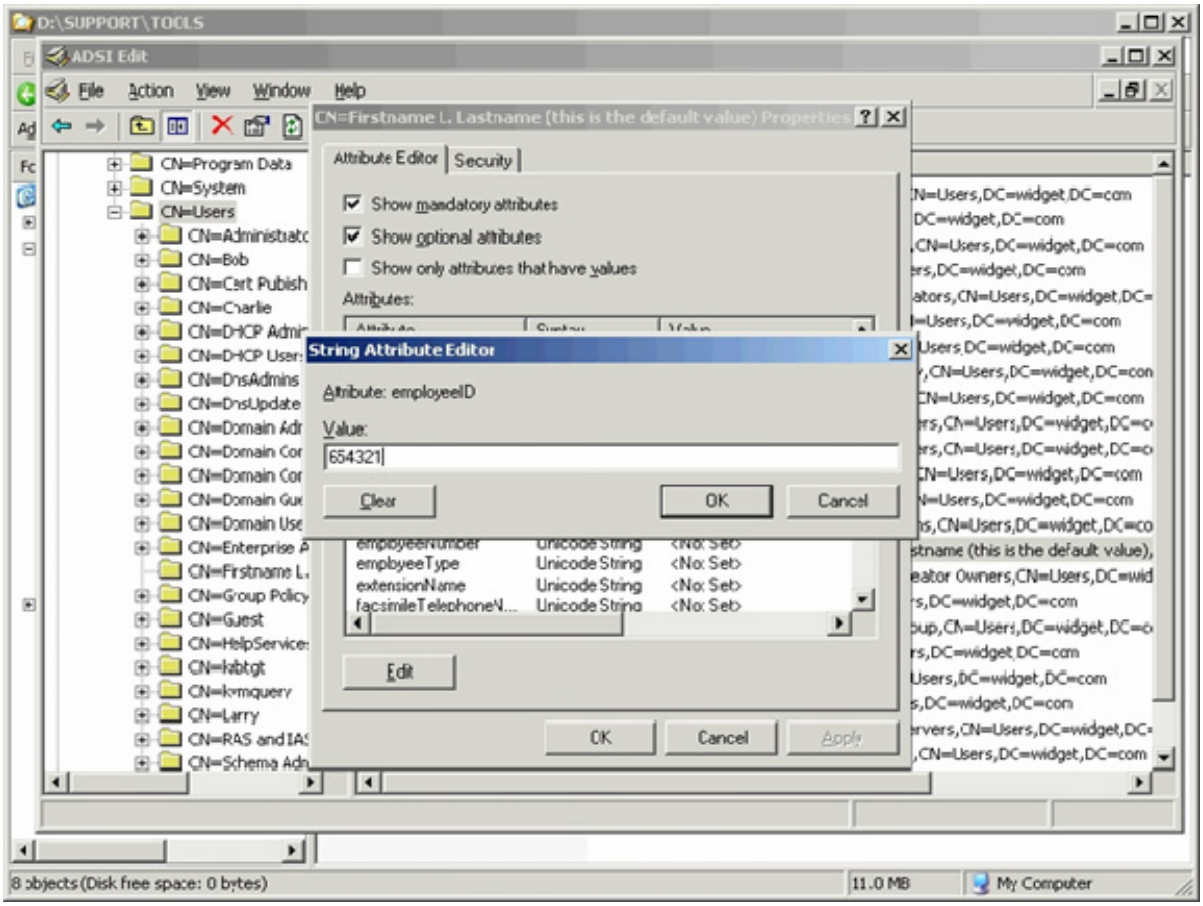
Additional attributes available in user properties

In addition to the Properties that are set during object creation, there is at least one property that could potentially be useful as a credential: E-mail.



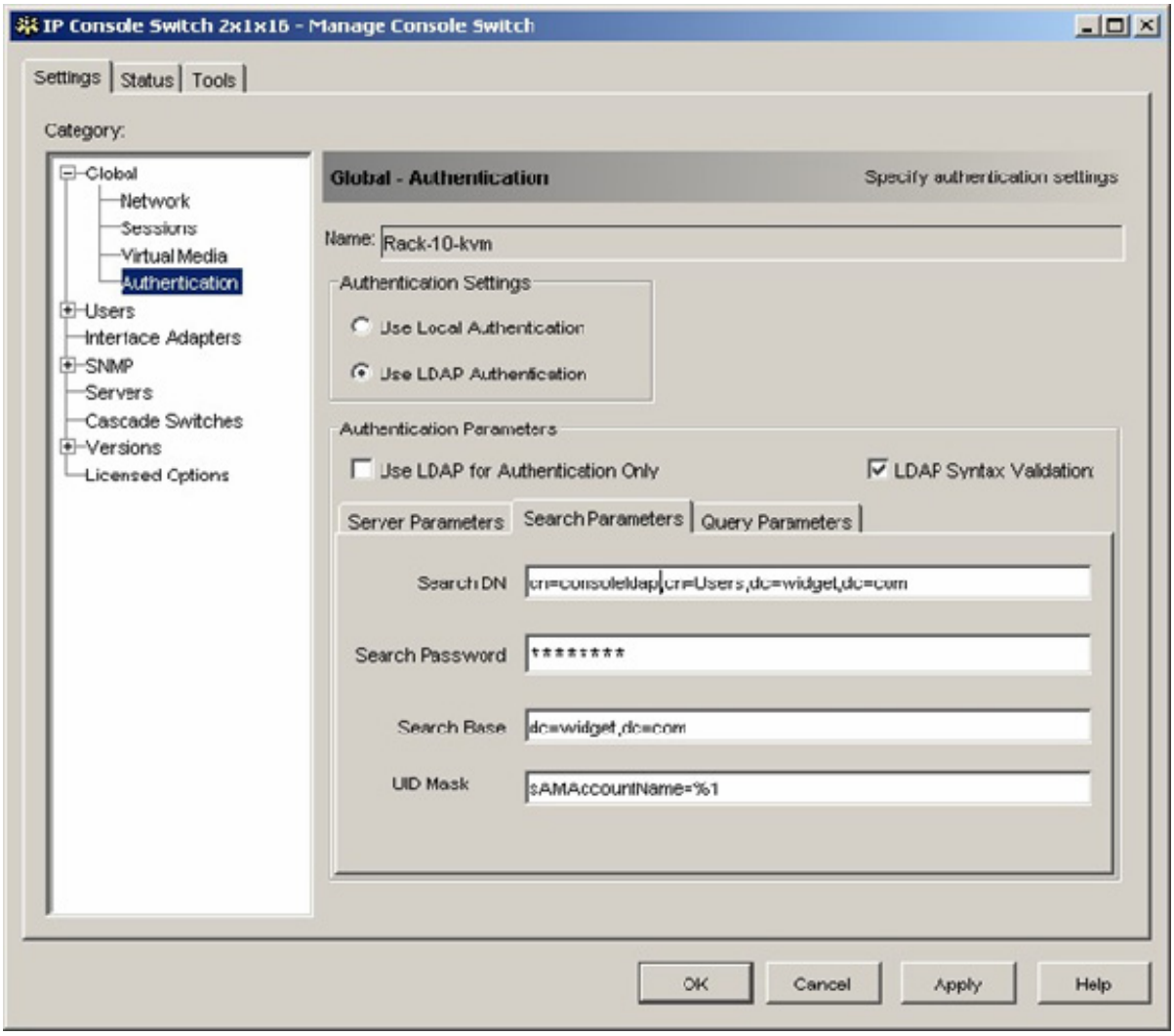
Additional attributes available through the ADSI Editor

In addition to the attributes set during object creation and in the Properties dialog, at least two other attributes could be useful as a credential: employeeID and employeeNumber. These attributes can be viewed and set using a standard Microsoft tool, ADSI Editor. The following is an example of using the ADSI Editor tool to set the value of employeeID.



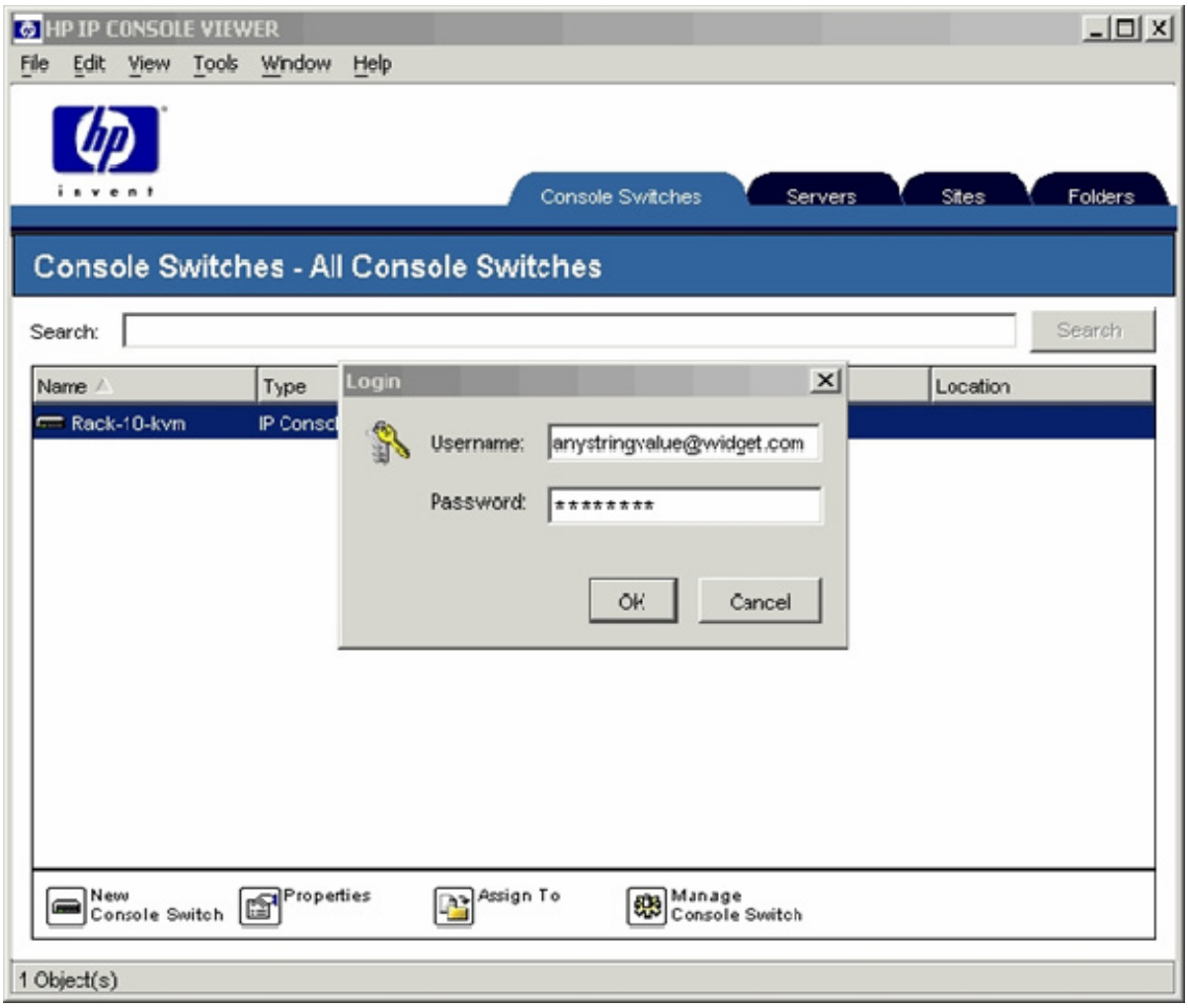
UID mask for single factor credentials

The UID Mask field is used to specify which attributes are used as credentials. The default value for UID mask is shown in the following example.

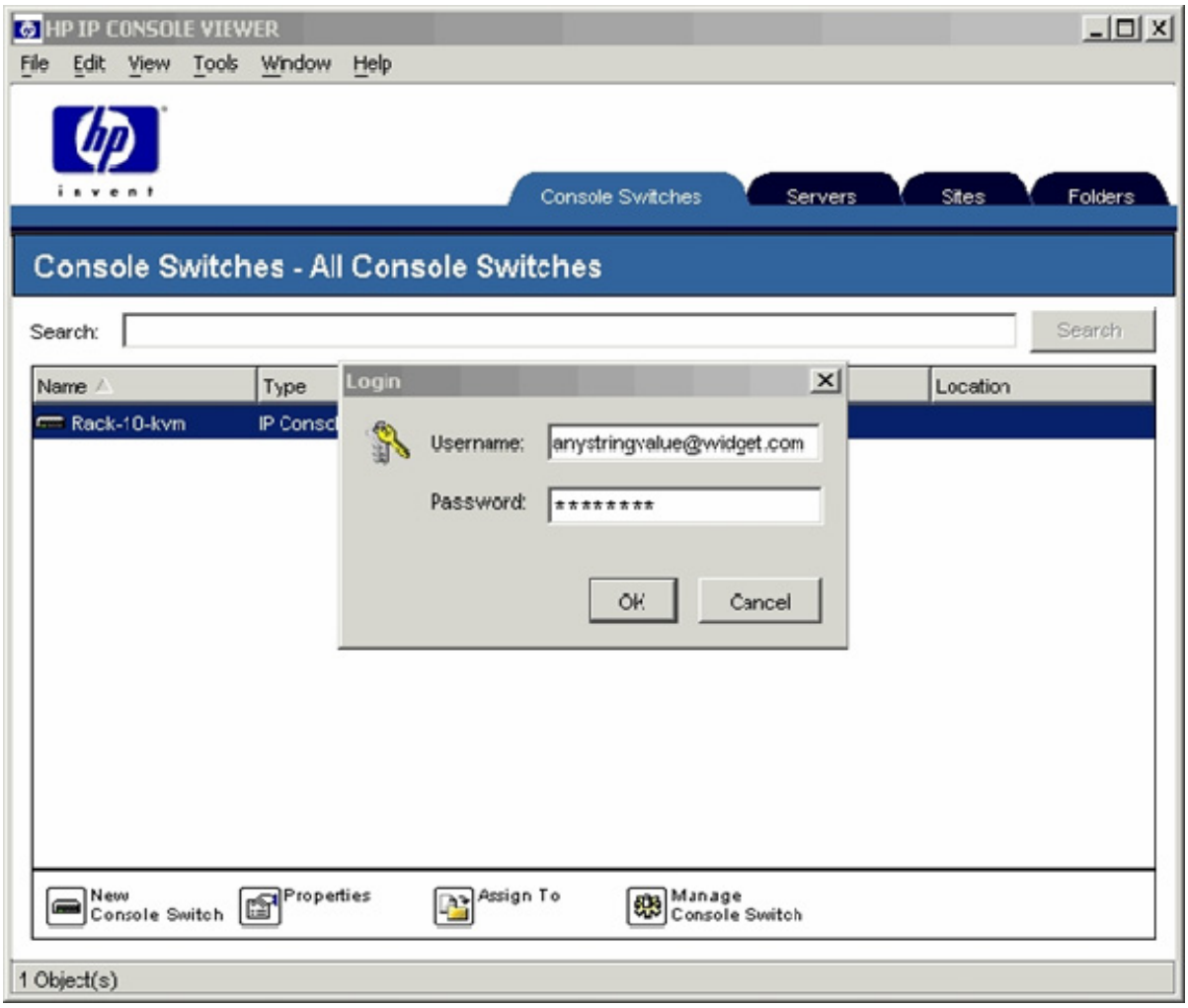


In the preceding example, the UID mask value indicates that a single attribute, sAMAccountName, is being used in the credentials. The mask is set to %1, which refers to the first token entered by the user into the user name field of the login dialog of the client application. The contents of the user name field is parsed into tokens using the following characters as token delimiters: @, !, and &.

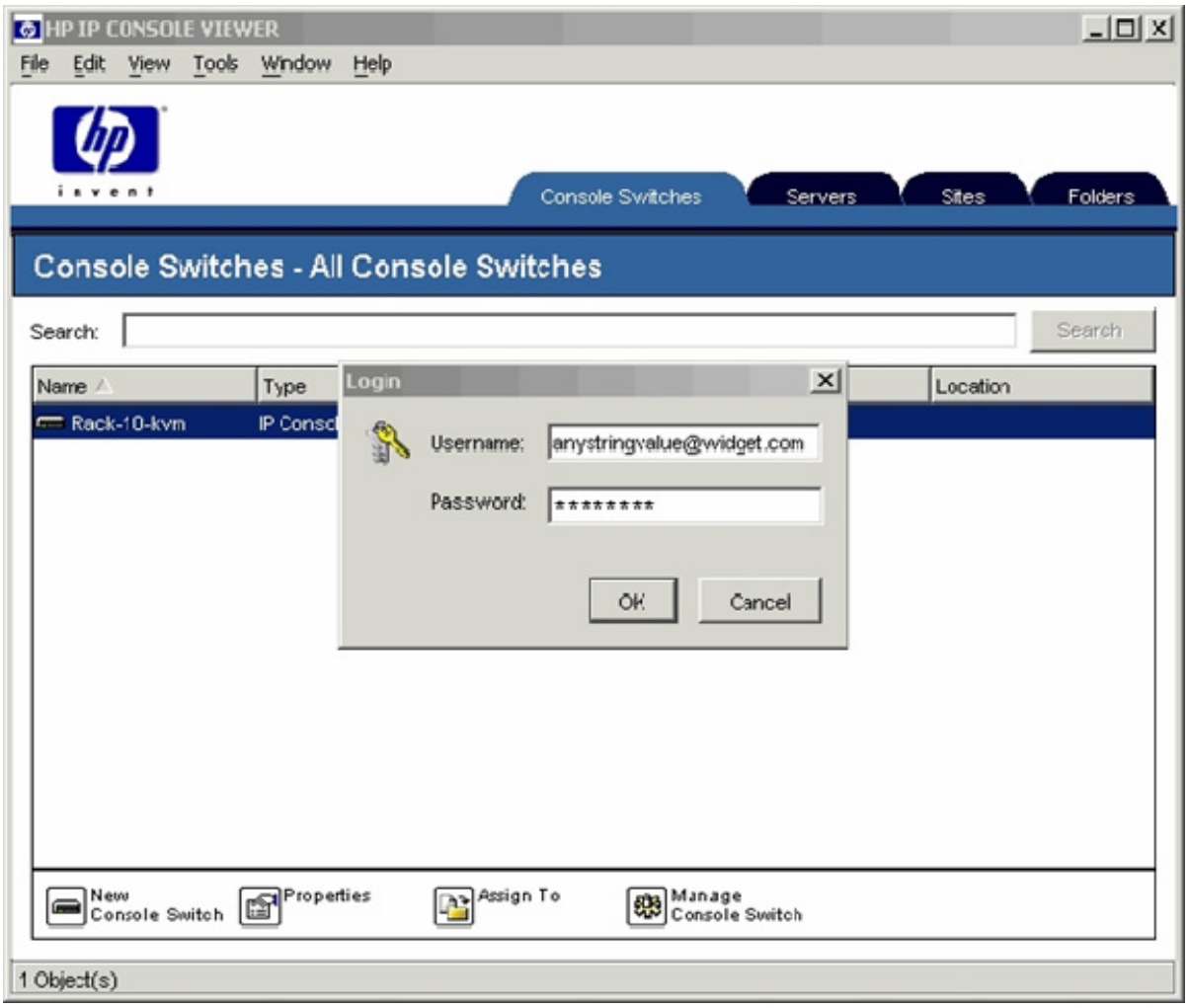
In the following example, the user name field contents would be parsed into two tokens: the first token is the string *anystringvalue* and the second token is *widget.com*.



These two tokens are referenced in the UID mask by using the replacement parameters %1 and %2, respectively. Consider the use of UPN as an example of using two replacement parameters.

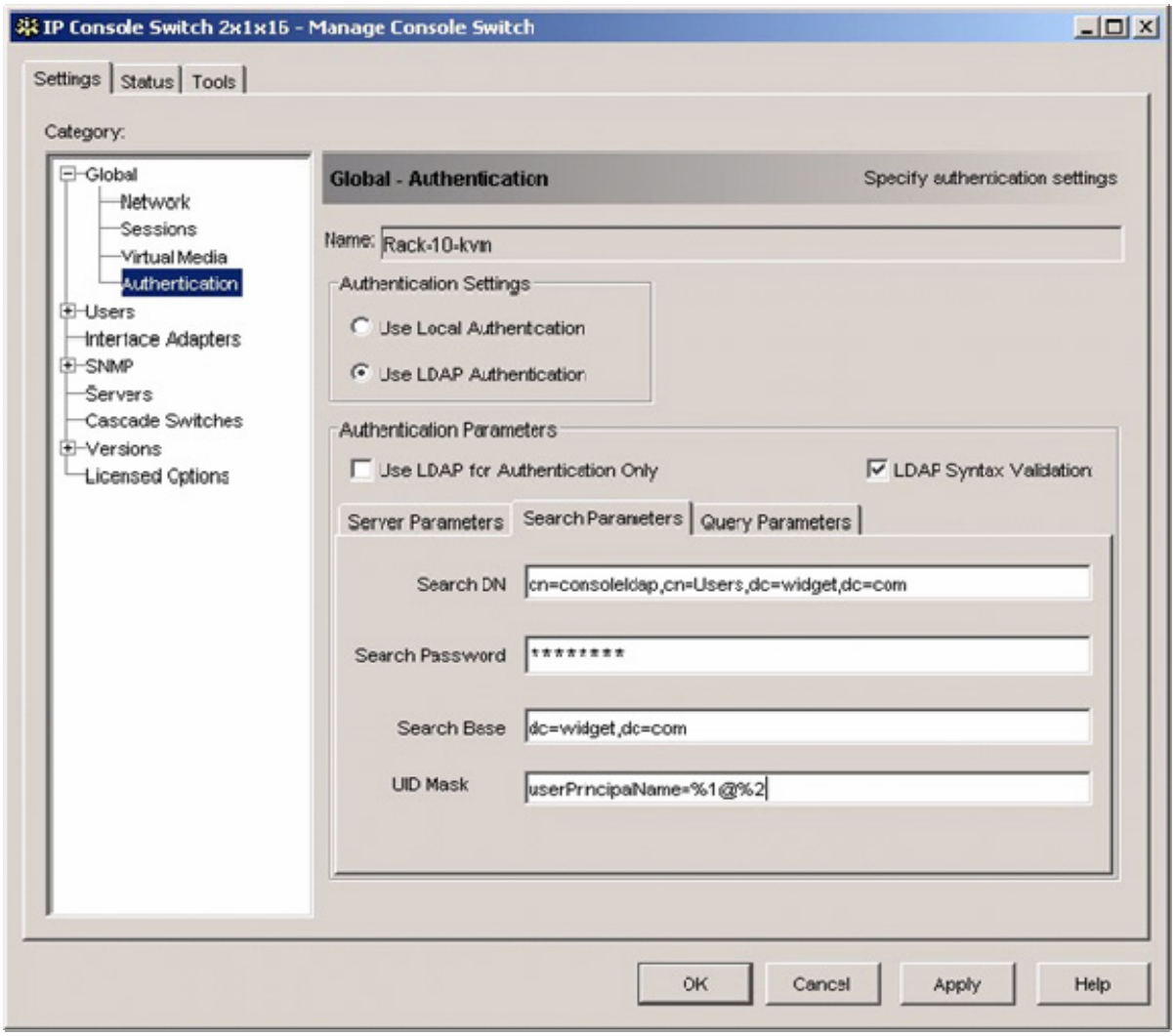


When using UPN, enter the entire UPN in the User logon name field of the login dialog of the client application.

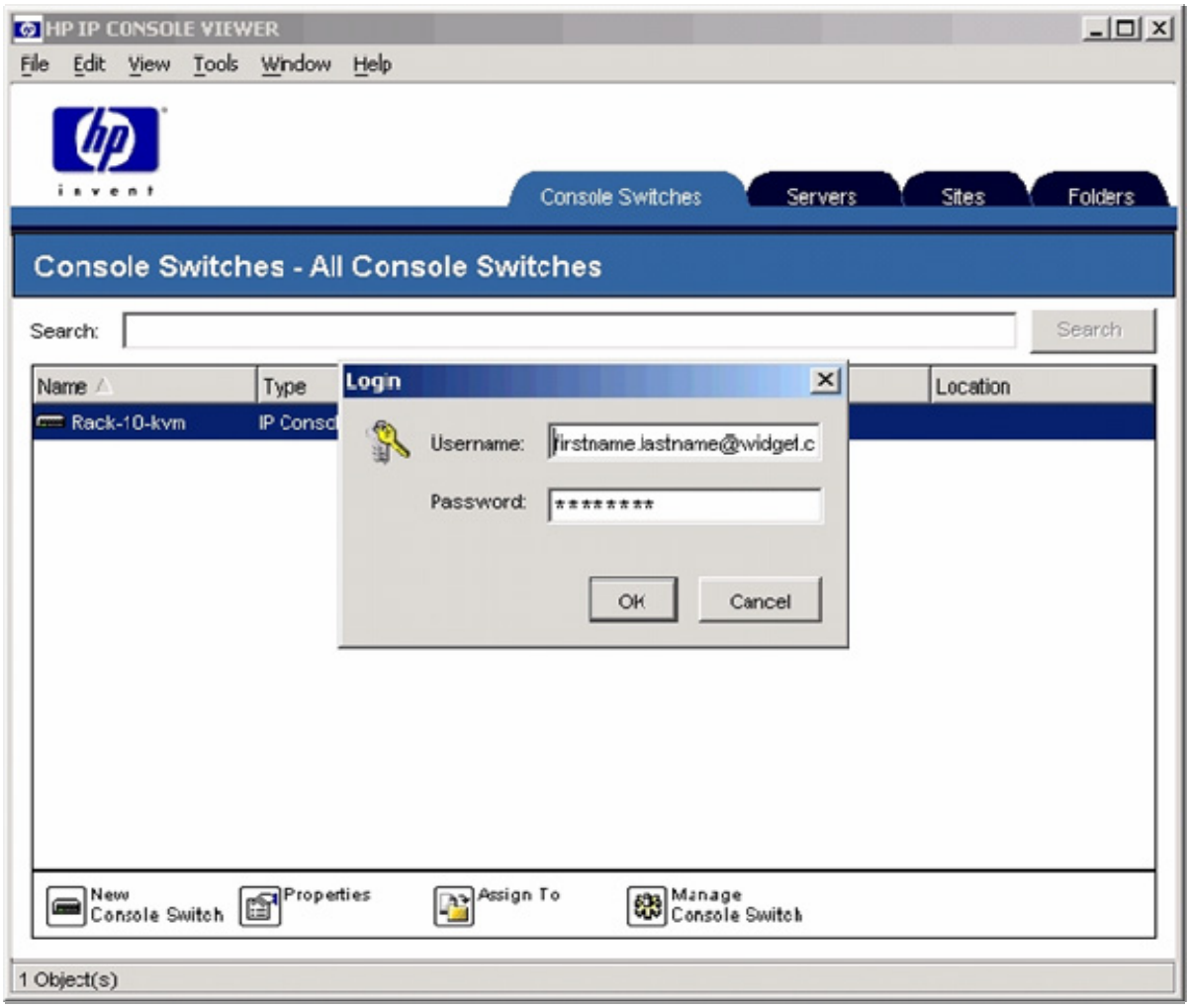


In this example, the console switch firmware parses the user name field into two pieces: the replacement parameter %1 gets the value "anystringvalue" and the replacement parameter %2 gets the value "widget.com." The period (.) character is not a token delimited, and therefore widget.com is a single token.

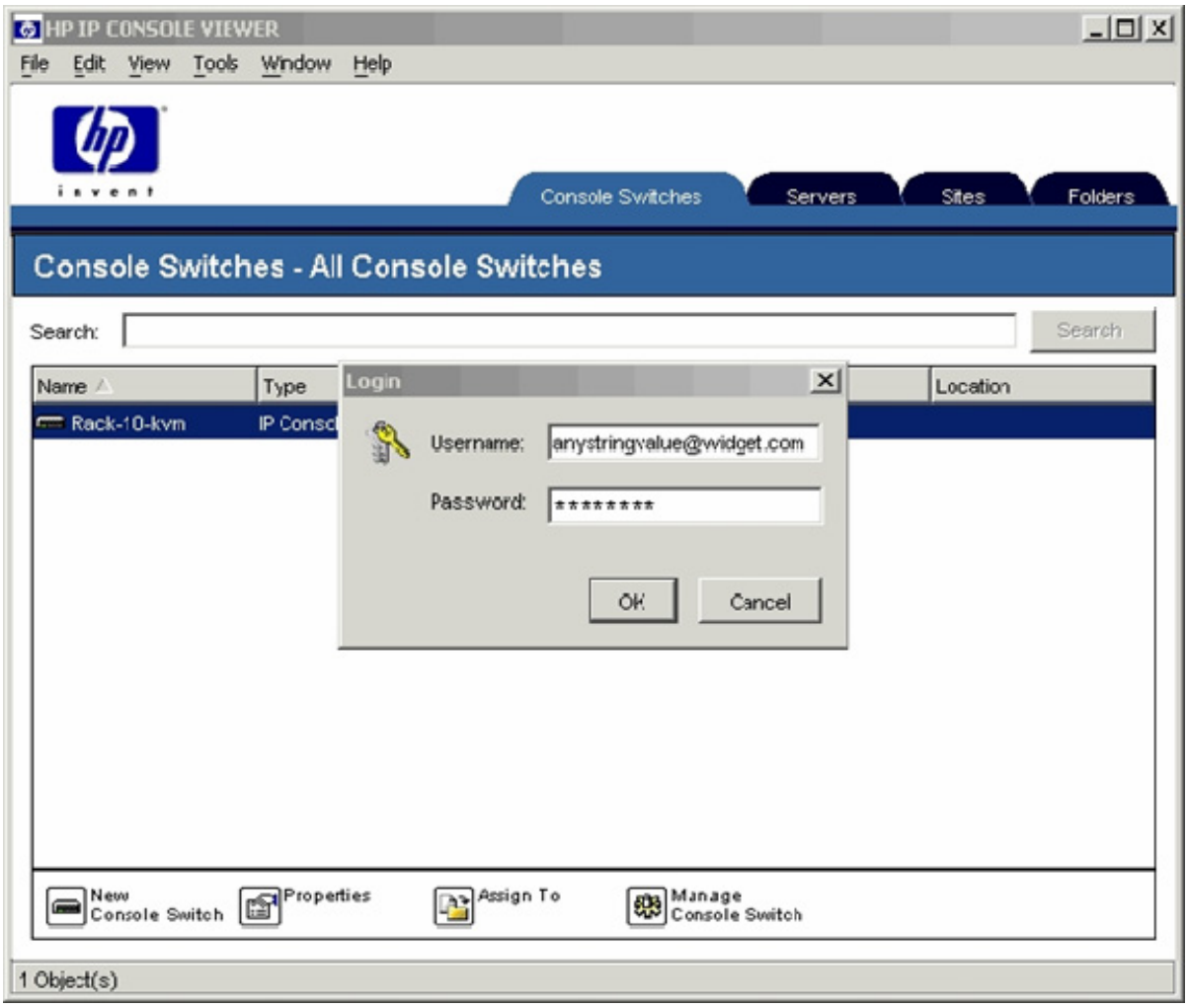
The corresponding UID mask is shown in the following example.



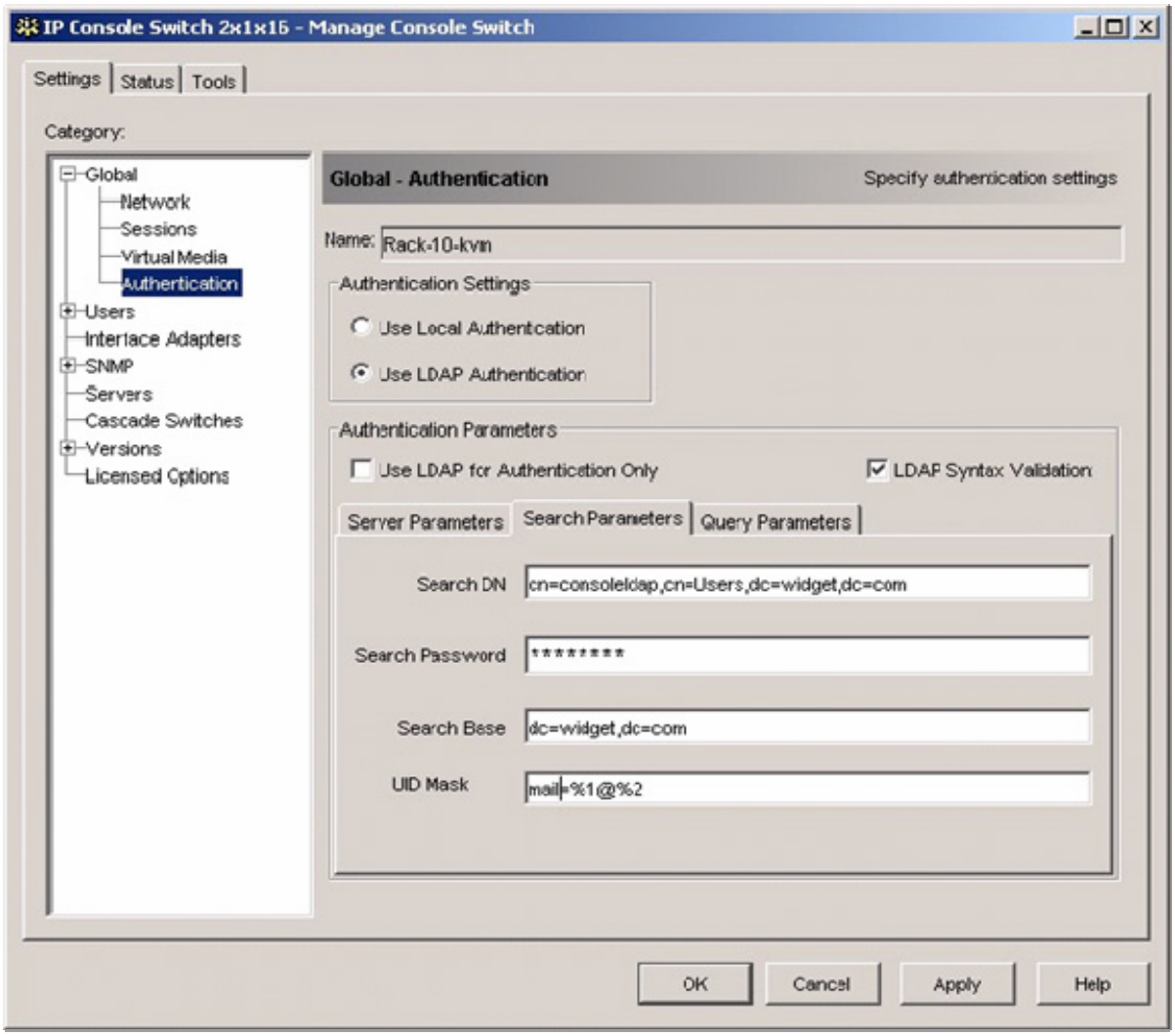
Another valid way to UPN is to change the first part to have the form: <first name>.<last name>. The UID mask does not need to change because the period between the first name and the last name is not a token delimiter. So, the UID mask remains as in the preceding figure, while the credentials entered in the login dialog of the client application become the following.



Of course, for this example, the user logon name would have to be changed in the Active Directory object representing the user.

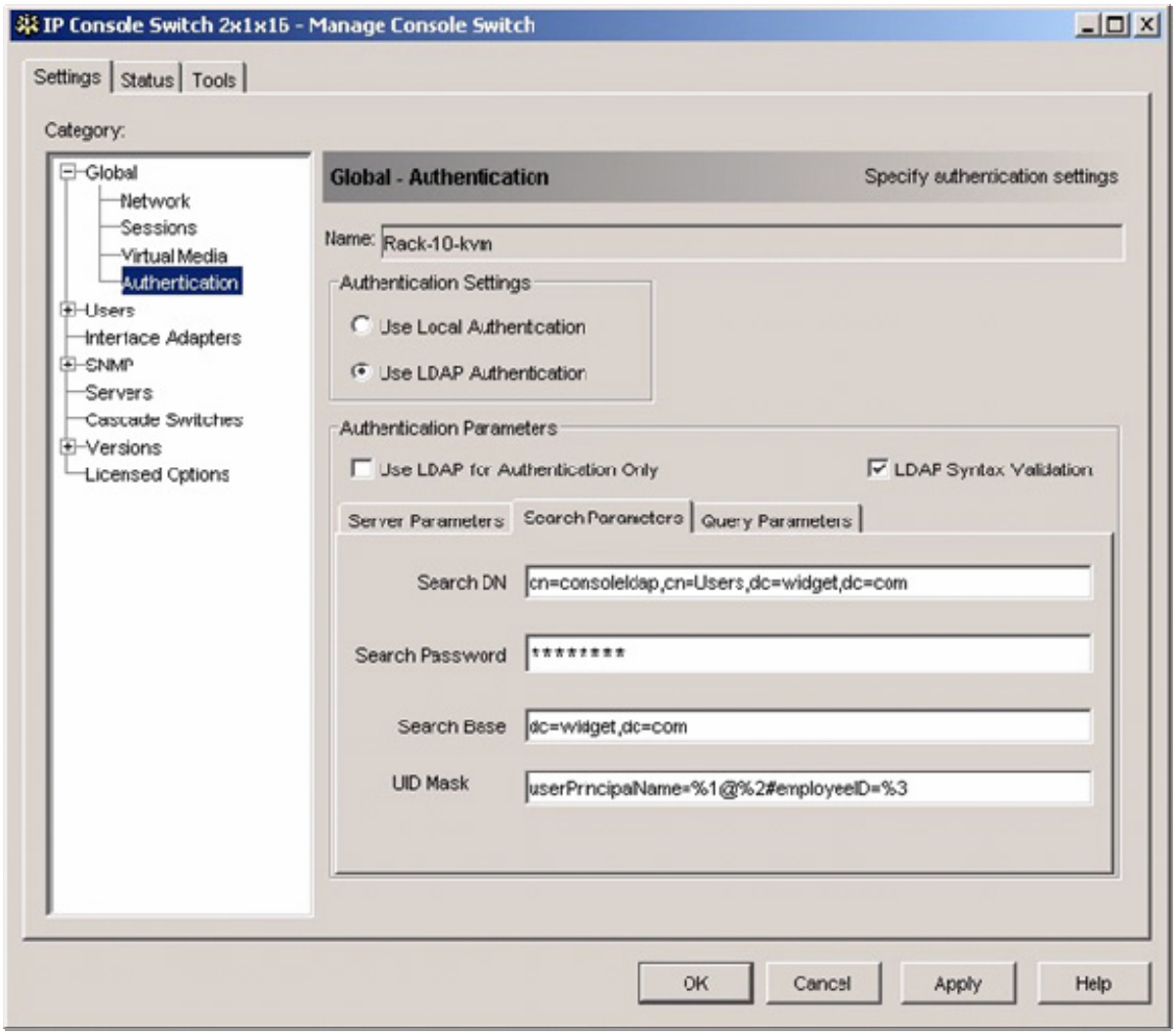


To use the e-mail address as part of the credentials, the UID mask would be changed to the following.

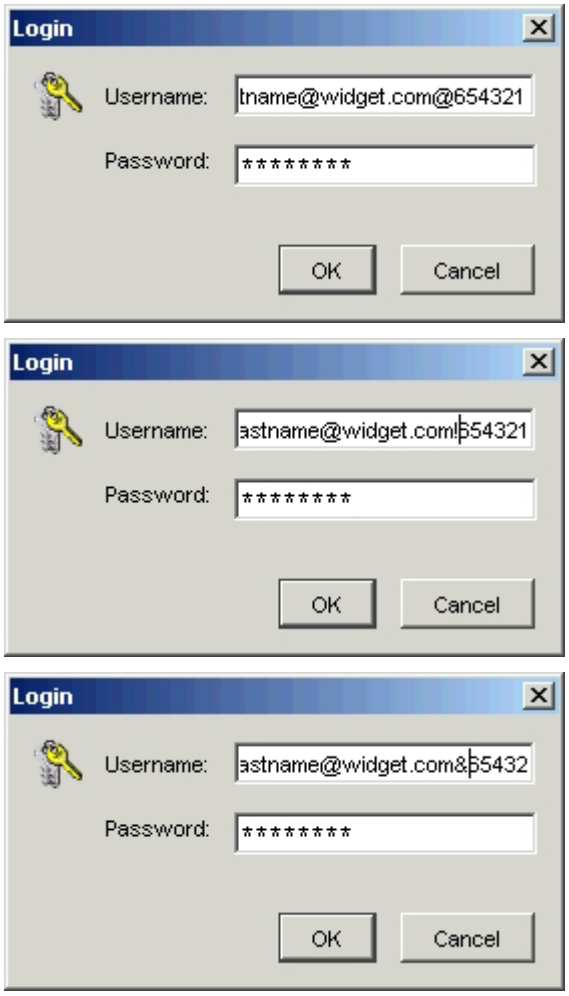


UID mask for multiple factor credentials

For added security, an administrator might want to implement a policy that says authentication is based on UPN, password, and employeeID. In other words, the user logging in must know the UPN, password, and employeeID. The UID mask must be changed to indicate there are two attributes used as the "user name." The two attributes are separated by a # in the UID mask, as shown in the following figure.



The string entered by the user in the login dialog can be any of the following three token delimiters from which to choose.



Serial Session Viewer terminal emulation modes

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Terminal emulation modes overview 238

Terminal emulation modes overview

The Serial Session Viewer supports several terminal emulation modes. This section lists the supported terminal emulation control characters and byte sequences for the modes.

Encode refers to how the client application processes typed keys. Decode refers to how the client application processes data coming from the server.

VT terminal emulation

In the VT terminal emulation modes, when a key on the keypad is entered, it is treated as its label. For example, is you press the 7 on the keypad, it is encoded as a 7. Pressing the key containing a period causes a period to be encoded.

VT100+ terminal emulation

The VT100+ emulation mode provides compatibility with the Microsoft headless server EMS serial port interface. The Serial Console Viewer VT100+ terminal emulation works identically to VT100, with the exception of support for the function keys listed in VT100+ Function Key Support.

Function	Sequence	Function	Sequence
Home	<Esc> h	F4**	<Esc> 4
End	<Esc> k	F5	<Esc> 5
Insert	<Esc> +	F6	<Esc> 6
Delete*	<Esc> -	F7	<Esc> 7
Page Up	<Esc> ?	F8	<Esc> 8
Page Down	<Esc> /	F9	<Esc> 9
F1**	<Esc> 1	F10	<Esc> 0
F2**	<Esc> 2	F11	<Esc> !
F3**	<Esc> 3	F12	<Esc> @

* ASCII, VT100 and VT102 modes send hex 7F when the Delete key is pressed.
** VT100 and VT102 modes map the F1 through F4 keys to the PF1 through PF4 keys.

VT102 terminal emulation

VT102 terminal emulation works identically to VT100 with additional support for decoding receive codes as described in VT102 Receive Codes.

VT102 receive code	Action
Delete Character (DHC)	Deletes n characters starting with the character at the current cursor position, and moves all remaining characters left n positions. n spaces are inserted at the right margin.
Insert Line (IL)	Inserts n lines at the line where the cursor is currently positioned. Lines displayed below the cursor position move down. Lines moved past the bottom margin are lost.
Delete Line (DL)	Deletes n lines starting with the line where the cursor is currently positioned. As lines are deleted, lines below the cursor position move up.

VT100 terminal emulation

VT100 Special Keys and Control Keys lists the VT100 special key and Control key combinations and indicates HP encoding/decoding support, where Yes indicates supported and No indicates not supported.

Key	Hex code	Function mnemonic	Encode/decode
Return	0D	CR	Yes/Yes
Linefeed	0A	LF	Yes/Yes
Backspace	08	BS	Yes/Yes
Tab	09	HT	Yes/Yes
Spacebar	20	(SP)	Yes/Yes
Esc	1B	ESC	Yes/No
Ctrl+Spacebar	00	NUL	Yes/No
Ctrl+A	01	SOH	Yes/No
Ctrl+B	02	STX	Yes/No
Ctrl+C	03	ETX	Yes/No
Ctrl+D	04	EOT	Yes/No
Ctrl+E	05	ENQ	Yes/No
Ctrl+F	06	ACK	Yes/No
Ctrl+G	07	BELL	Yes/Yes
Ctrl+H	08	BS	Yes/Yes
Ctrl+I	09	HT	Yes/Yes
Ctrl+J	0A	LF	Yes/Yes
Ctrl+K	0B	VT	Yes/No
Ctrl+L	0C	FF	Yes/No
Ctrl+M	0D	CR	Yes/No
Ctrl+N	0E	SO	Yes/No
Ctrl+O	0F	SI	Yes/No
Ctrl+P	10	DLE	Yes/No
Ctrl+Q	11	DC1 or XON	Yes/No
Ctrl+R	12	DC2	Yes/No
Ctrl+S	13	DC3 or XOFF	Yes/No
Ctrl+T	14	DC4	Yes/No
Ctrl+U	15	NAK	Yes/No

Key	Hex code	Function mnemonic	Encode/decode
Ctrl+V	16	SYN	Yes/No
Ctrl+W	17	ETB	Yes/No
Ctrl+X	18	CAN	Yes/No
Ctrl+Y	19	EM	Yes/No
Ctrl+Z	1A	SUB	Yes/No
Ctrl+[	1B	ESC	Yes/No
Ctrl+\	1C	FS	Yes/No
Ctrl+]	1D	GS	Yes/No
Ctrl+-	1E	RS	Yes/No
Ctrl+?	1F	US	Yes/No

VT100 ANSI set and reset mode cursor keys

VT100 ANSI set and reset mode cursor keys lists the VT100 ANSI mode and cursor keys for set and reset modes. Encoding and decoding is supported for all the cursor keys listed.

Cursor key	Mode reset	Mode set
Up	Esc [A	Esc O A
Down	Esc [B	Esc O B
Right	Esc [C	Esc O C
Left	Esc [D	Esc O D

VT100 PF1 through PF4 key definitions

VT100 PF1 through PF4 key definitions lists the VT100 PF1 through PF4 key defintions. Encoding of each listed key is supported; decoding is not applicable.

Key	Code sequence
F1	Esc [O P
F2	Esc [O Q
F3	Esc [O R
F4	Esc { O S

VT100 ANSI mode control sequences

VT100 ANSI mode control sequences lists the ANSI mode control sequences for VT100 terminal emulation and indicates HP encoding/decoding support, where Yes indicates supported and No indicates not supported.

Control sequence	Definition	Encode/Decode
Esc [Pn; Pn R	Cursor position report	No/No
Esc [Pn D	Cursor backward	No/Yes
Esc [Pn B	Cursor down	No/Yes
Esc [Pn C	Cursor forward	No/Yes
Esc [Pn; Pn H	Cursor position	No/Yes
Esc [Pn A	Cursor up	No/Yes

Control sequence	Definition	Encode/Decode
Esc [Pn c	Device attributes	No/No
Esc # 8	Screen alignment display	No/Yes
Esc # 3	Double height line- top half	No/No
Esc # 4	Double height line- bottom half	No/No
Esc # 6	Double width line	No/No
Esc Z	Identify terminal	No/No
Esc =	Keypad application mode	No/No
Esc >	Keypad numeric mode	No/No
Esc [Ps q	Load LEDs	No/No
Esc 8	Restore cursor	No/Yes
Esc [<sol>; <par>; <nbits>; <xspeed>; <rspeed>; <clkmul>; <flags>x	Report terminal parameters	No/No
Esc [<sol> x	Request terminal parameters	No/No
Esc 7	Save cursor	No/Yes
Esc [Pn; Pn r	Set top and bottom margins	No/No
Esc # 5	Single width line	No/No
Esc [2; Ps y	Invoke confidence test	No/No
Esc [Ps n	Device status report	No/Yes
Esc [Ps J	Erase in display	No/Yes
Esc [Ps K	Erase in line	No/Yes
Esc H	Horizontal tabulation set	No/No
Esc [Pn; Pn f	Horizontal and vertical position	No/Yes
Esc D	Index	No/Yes
Esc E	Next line	No/Yes
Esc M	Reverse index	No/Yes
Esc c	Reset to initial state	No/No
Esc [Ps; Ps;..;Ps 1	Reset mode	No/No
Esc (A	Select character set G0 U.K.	No/No
Esc) A	Select character set G1 U.K.	No/No
Esc (B	Select character set G0 ASCII	No/No
Esc) B	Select character set G1 ASCII	No/No
Esc (0	Select character set G0 spec. graphics	No/No
Esc) 0	Select character set G1 spec. graphics	No/No
Esc (1	Select character set G0 alt. character ROM standard character set	No/No
Esc) 1	Select character set G1 alt. character ROM standard character set	No/No

Control sequence	Definition	Encode/Decode
Esc (2	Select character set G0 alt. character ROM special graphics	No/No
Esc) 2	Select character set G1 alt. character ROM special graphics	No/No
Esc [Ps;..; Ps m	Select graphic rendition	No/No
Esc Ps;..;Ps h	Set mode	No/No
Esc [Ps g	Tabulation clear	No/No
Esc [Ps;Ps;..; Ps m	Character attributes • 0 or none- all Attributes Off • 1- Bold On • 4- Underscore On • 5- Blink On • 7- Reverse Video On	No/Reverse and Bold supported; Blink and Underscore appear as italic
Esc [K or Esc [0 K	Erase from cursor to end of line	No/Yes
Esc [1 K	Erase from beginning of line to cursor	No/No
Esc [2 K	Erase entire line containing cursor	No/No
Esc [J or Esc [0 J	Erase from cursor to end of screen	No/Yes
Esc [1 J	Erase from beginning of screen to cursor	No/No
Esc [2 J	Erase entire screen	No/No
Esc [Ps;Ps;..Ps q	Programmable LEDs	No/No
Esc [Pt; Pb r	Scrolling region	No/No
Esc H	Set tab at current column	No/No
Esc [g or Esc [0 g	Clear tab at current column	No/No
Esc [3 g	Clear all tabs	No/No
Esc [2 0 h	Modes to set- new line	No/Yes - Only supports linefeed/new line column mode wraparound
Esc [2 0 l	Modes to reset- linefeed	No/Yes- Only supports linefeed/new line column mode wraparound
Esc [? 1 h	Modes to set- cursor key mode appt.	No/No
Esc [? 1 l	Modes to rest- cursor key mode cursor	No/No
Esc [? 2 l	Modes to reset VT52	No/No
Esc [? 3 h	Modes to set- 132 columns	No/No
Esc [? 3 l	Modes to reset- 80 columns	No/No
Esc [? 4 h	Modes to set- smooth scroll	No/No
Esc [? 4 l	Modes to reset- jump scroll	No/No

Control sequence	Definition	Encode/Decode
Esc [? 5 h	Modes to set- reverse screen mode	No/No
Esc [? 5 l	Modes to reset- normal screen mode	No/No
Esc [? 6 h	Modes to set- relative origin mode	No/No
Esc [? 6 l	Modes to reset- absolute origin mode	No/No
Esc [? 7 h	Modes to set- wraparound On	No/No
Esc [? 7 l	Modes to reset- wraparound Off	No/No
Esc [? 8 h	Modes to set- auto repeat On	No/No
Esc [? 8 l	Modes to reset- auto repeat Off	No/No
Esc [? 9 h	Modes to set- interface On	No/No
Esc [? 9 l	Modes to reset- interface Off	No/No
Esc [P1; Pc R	Report cursor position- response is	No/No
Esc [5 n	Status report- invoked by	No/No
Esc [0 n	Status report- response is terminal OK	No/No
Esc [3 n	Status report- response is terminal not OK	No/No
Esc [x or Esc [0 c	What are you? Invoked by	No/No
Esc [? 1; Ps c	What are you? Response is	No/No
Esc c	Reset	No/No
Esc # 8	Fill screen with Es	No/Yes
Esc [2; Ps y	Invoke test(s)	No/No

VT220 terminal emulation

VT220 encoding lists the keystroke mapping (encoding) for VT220 emulation.

VT220 keyboard	PC keyboard	VT200 KB byte sequence
Delete	Delete	0x7F
Left arrow	Left arrow	Esc [D
Right arrow	Right arrow	Esc [C
Up arrow	Up arrow	Esc [A
Down arrow	Down arrow	Esc [B
Keypad /	Keypad /	/
Keypad *	Keypad *	*
Keypad -	Keypad -	-
Keypad +	Keypad +	+
Keypad .	Keypad .	.
Keypad 0..9	Keypad 0..9	0..9

VT220 keyboard	PC keyboard	VT200 KB byte sequence
F1	F1	Esc O P
F2	F2	Esc O Q
F3	F3	Esc O R
F4	F4	Esc O S
F6	F6	Esc [1 7 ~
F7	F7	Esc [1 8 ~
F8	F8	Esc [1 9 ~
F9	F9	Esc [2 0 ~
F10	F10	Esc [2 1 ~
F11	F11	Esc [2 3 ~
F12	F12	Esc [2 4 ~
F13	Ctrl - F5	Esc [2 5 ~
F14	Ctrl - F6	Esc [2 6 ~
F15	Ctrl - F7	Esc [2 8 ~
F16	Ctrl - F8	Esc [2 9 ~
F17	Ctrl - F9	Esc [3 1 ~
F18	Ctrl - F10	Esc [3 2 ~
F19	Ctrl - F11	Esc [3 3 ~
F20	Ctrl - F12	Esc [3 4 ~

VT220 decoding

VT220 decoding lists the VT220 terminal emulation decoding.

VT220 keyboard function	VT220 keyboard byte sequence
Index	Esc D
New line	Esc E
Reverse index	Esc M
Escape O	Esc O
Save cursor and attributes	Esc 7
Restore cursor and attributes	Esc 8
Up arrow	Esc [A
Down arrow	Esc [B
Right arrow	Esc [C
Left arrow	Esc [D
Set cursor to home position	Esc [H
Set cursor to home position	Esc [f
Character attributes	Esc [m
Erase from cursor to end of line	Esc [K
Erase from cursor to end of screen	Esc [J
Programmable LEDs	Esc [q
What are You?	Esc [c

VT220 keyboard function	VT220 keyboard byte sequence
Set mode	Esc [?
Delete 1 character	Esc [P
Insert 1 line	Esc [L
Delete 1 line	Esc [M
Up arrow	Esc O A
Down arrow	Esc O B
Right arrow	Esc O C
Left arrow	Esc O D
Fill screen with Es	Esc # 8
Up arrow amount specified by Pn	Esc [Pn A
Down arrow amount specified by Pn	Esc [Pn B
Right arrow amount specified by Pn	Esc [Pn C
Left arrow amount specified by Pn	Esc [Pn D
Erase parts of current line	Esc [Pn K
Erase parts of current screen	Esc [Pn J
Direct cursor addressing	Esc [Pn H
Direct cursor addressing	Esc [Pn f
Programmable LEDs	Esc [Pn q
Scrolling region	Esc [Pn r
Clear tabs	Esc [Pn g
Device status report	Esc [Pn n
What are you?	Esc [Pn c
Set mode	Esc [Pn h
Delete Pn characters	Esc [Pn P
Insert Pn lines	Esc [Pn L
Delete Pn lines	Esc [Pn M
Insert character	Esc [Pn @
Erase Pn characters	Esc [Pn X

VT52 terminal emulation

VT52 encoding lists the keystroke mapping (encoding) for VT52 terminal emulation.

VT52 keyboard	PC character sequence	VT52 keyboard byte sequence
Delete	Delete	0x7F
Up arrow	Up arrow	Esc A
Down arrow	Down arrow	Esc B
Right arrow	Right arrow	Esc C
Left arrow	Left arrow	Esc D
Shift-F1	PF1	Esc P
Shift-F2	PF2	Esc Q

VT52 keyboard	PC character sequence	VT52 keyboard byte sequence
Shift-F3	PF3	Esc R
Shift-F4	PF4	Esc S

VT52 decoding

VT52 decoding lists the decoding for VT52 terminal emulation.

VT52 keyboard function	VT52 keyboard byte sequence
Cursor up	Esc A
Cursor down	Esc B
Cursor right	Esc C
Cursor left	Esc D
Cursor home	Esc H
Reverse linefeed	Esc I
Erase to end of screen	Esc J
Erase to end of line	Esc K

VT320 terminal emulation

VT320 encoding lists the keystroke mapping (encoding) for VT320 terminal emulation.

VT320 keyboard	PC character sequence	VT320 keyboard byte sequence
Escape key	Esc	0x1B
F1	F1	Esc O P
F2	F2	Esc O Q
F3	F3	Esc O R
F4	F4	Esc O S
F5	F5	Esc O T
F6	F6	Esc [1 7 ~
F7	F7	Esc [1 8 ~
F8	F8	Esc [1 9 ~
F9	F9	Esc [2 0 ~
F10	F10	Esc [2 1 ~
F11	F11	Esc [2 3 ~
F12	F12	Esc [2 4 ~
F13	Ctrl - F5	Esc [2 5 ~
F14	Ctrl - F6	Esc [2 6 ~
F15	Ctrl - F7	Esc [2 8 ~
F16	Ctrl - F8	Esc [2 9 ~
F17	Ctrl - F9	Esc [3 1 ~
F18	Ctrl - F10	Esc [3 2 ~
F19	Ctrl - F11	Esc [3 3 ~
F20	Ctrl - F12	Esc [3 4 ~

VT320 keyboard	PC character sequence	VT320 keyboard byte sequence
Insert	Insert	Esc [1 ~
Home	Home	Esc [2 ~
Delete	Delete	0x7F
End	End	Esc [5 ~
Up arrow	Up arrow	Esc [A
Down arrow	Down arrow	Esc [B
Left arrow	Left arrow	Esc [D
Right arrow	Right arrow	Esc [C

VT320 decoding

VT320 decoding lists the decoding for VT320 terminal emulation.

VT320 keyboard function	VT320 keyboard byte sequence
Index	Esc D
New line	Esc E
Reverse index	Esc M
Escape O	Esc O
Save cursor and attributes	Esc 7
Restore cursor and attributes	Esc 8
Up arrow	Esc [A
Down arrow	Esc [B
Right arrow	Esc [C
Left arrow	Esc [D
Set cursor to home position	Esc [H
Set cursor to home position	Esc [f
Character attributes	Esc [m
Erase from cursor to end of line	Esc [K
Erase from cursor to end of screen	Esc [J
Programmable LEDs	Esc [q
What are You?	Esc [c
Set mode	Esc [?
Delete 1 character	Esc [P
Insert 1 line	Esc [L
Delete 1 line	Esc [M
Up arrow	Esc O A
Down arrow	Esc O B
Right arrow	Esc O C
Left arrow	Esc O D
Fill screen with Es	Esc # 8
Up arrow amount specified by Pn	Esc [Pn A
Down arrow amount specified by Pn	Esc [Pn B

VT320 keyboard function	VT320 keyboard byte sequence
Right arrow amount specified by Pn	Esc [Pn C
Left arrow amount specified by Pn	Esc [Pn D
Erase parts of current line	Esc [Pn K
Erase parts of current screen	Esc [Pn J
Direct cursor addressing	Esc [Pn H
Direct cursor addressing	Esc [Pn f
Programmable LEDs	Esc [Pn q
Scrolling region	Esc [Pn r
Clear tabs	Esc [Pn g
Device status report	Esc [Pn n
What are you?	Esc [Pn c
Set mode	Esc [Pn h
Delete Pn characters	Esc [PN P
Insert Pn lines	Esc [Pn L
Delete Pn lines	Esc [Pn M
Insert characters	Esc [Pn @
Erase Pn characters	Esc [Pn X

Keyboard and mouse shortcuts

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Divider pane keyboard and mouse shortcuts

This table lists the keyboard and mouse shortcuts that can be used in main window.

Operation	Description
F6	Navigates between the split-screens and gives focus to the last element that had focus.
F8	Gives focus to the divider.
Left arrow or Up arrow	Moves the divider left if the divider has the focus.
Right arrow or Down arrow	Moves the divider right if the divider has the focus.
Home	Gives the right pane of the split-screen all of the area (left pane disappears) if the divider has the focus.
End	Gives the left pane of the split-screen all of the area (right pane disappears) if the divider has the focus.
Click + Mouse drag	Moves the divider left or right.

Group view control keyboard and mouse shortcuts

This table lists the keyboard and mouse shortcuts that can be used in main window.

Operation	Description
Mouse single-click	Clears the existing selection and selects the node the mouse pointer is over.
Mouse double-click	Toggles the expand/collapse state of an expandable node (a node with children). Does nothing on a leaf node (a node with not children).
Up arrow	Clears the existing selection and selects the next node above the current focus point.
Down arrow	Clears the existing selection and selects the next node below the current focus point.
Spacebar	Alternately selects/clears the node that currently has the focus.
Enter	Alternately collapses/expands the node that has focus. Only applies to nodes that have children. Does nothing if a node has no children.
Home	Clears the existing selection and selects the root node.
End	Clears the existing selection and selects the last node displayed in the tree.

List view keyboard and mouse operations

This table lists the keyboard and mouse shortcuts that can be used in main window.

Operation	Description
Enter or Return	Launches the default action for the selected unit.
Up arrow	Clears the current selection and moves selection up one row.
Down arrow	Clears the current selection and moves selection down one row.
Page up	Clears the current selection and scrolls up one page, then selects the first item on the page.
Page down	Clears the current selection and scrolls down one page, then selects the last item on the page.
Delete	Performs the Delete function. Works the same as the Edit - Delete menu function.
Ctrl + Home	Moves the focus and the selection to the first row in the table.
Ctrl + End	Moves the focus and the selection to the last row in the table.
Shift + Up arrow	Extends the selection up one row.
Shift + Down arrow	Extends the selection down one row.
Shift + Page up	Extends the selection up one page.
Shift + Page down	Extends the selection down one page.
Shift + Mouse click	Clears any existing selection and selects the range of rows between the current focus point and the row the mouse pointer is over when the mouse is clicked.
Ctrl + Mouse click	Toggles the selection state of the row the mouse pointer is over without affecting the selection state of any other row.
Mouse double-click	Launches the default action for the selected console switch or server.

Acronyms and abbreviations

3DES

Triple Data Encryption Standard

ACL

Access Control List

AD

Active Directory

ADAM

Active Directory Application Mode

ADSI

Active Directory Service Interface

ADUC

Active Directory users and computers

AMD

Advanced Micro Devices

ASCII

American Standard Code for Information Interchange

BDC

Backup Domain Controller

CLI

Command Line Interface

CN

common name

CSV

comma-separated value

DAP

directory access protocol

DES

Data Encryption Standard

DIT

Directory Information Tree

DN

distinguished name

DNS

domain name system

EID

electronic identification number

GC

global catalog

GDI

Graphics Device Interface

GUI

graphical user interface

IDE

integrated device electronics

iLO

Integrated Lights-Out

IP

Internet Protocol

KVM

keyboard, video, and mouse

LAN

local-area network

LDAP

Lightweight Directory Access Protocol

MAC

medium access control

MCS

manage console switch panels

MIB

management information base

MMC

Microsoft® Management Console

NAT

Network Address Translation

NFS

network file system

NTP

network time protocol

OSD

on-screen display

OU

organizational unit

PDC

Primary Domain Controller

PPP

point-to-point protocol

RDN

Relative Distinguished Name

RILOE

Remote Insight Lights-Out Edition

RPM

Red Hat Package Manager

SLES

SUSE LINUX Enterprise Server

SMP

secure management protocol

SN

surname

SNMP

Simple Network Management Protocol

SSH

Secure Shell

SSL

Secure Sockets Layer

TCP

Transmission Control Protocol

TFTP

Trivial File Transfer Protocol

TSV

tab-separated value

UDP

User Datagram Protocol

UID

unit identification

UPN

user principal name

USB

universal serial bus

VPN

virtual private networking

Glossary

active directory

Active directory is the latest generation of network directory services offered by Microsoft®. It is supported by Windows® 2000 and Windows Server™ 2003. As a network directory system, active directory provides a highly scalable distributed repository for information about objects that reside in the network environment, such as users, applications, and console switches.

active directory users and computers MMC snap-in

MMC tool used to manage user and computer accounts in active directory. The tool also enables an administrator to create organizational units and other types of containers. This tool is installed automatically when active directory is installed.

attribute

Each active directory attribute constitutes a single property of an object stored in the active directory database. An object is described by the values of its attributes. For example, one of the active directory object classes is "person." One of the attributes for the object class person is named "info." The value of the info attribute is set by entering the desired value into the Properties field, accessible by the ADUC snap-in for the MMC. Another attribute associated with person is SAM Account Name (sAMAccountName). The value of the sAMAccountName attribute is set by entering the desired value into the Logon Name field, also accessible by the ADUC. The active directory schema defines the attributes associated with each object class. Each attribute has a type and one or more values. The attribute type defines the syntax of its values. The schema specifies the type of each attribute and whether it is multi-valued. See also object and LDAP Display Name.

child domain

A domain that is not a domain tree root. See also descendant domains.

container

In the context of active directory, the word "container" is used in two general ways. First, it is an object class defined in the schema and used in several objects created automatically when active directory is installed. For example, one of these default containers is called "users," a repository for user accounts and group objects containing user accounts. Group objects containing user accounts can be nested in various ways, so this container might hold hierarchies of groups as well as ungrouped user accounts. Active directory allows types of objects to be created in the users container as well. Similarly, there is a default container called "computers" that is a repository for computer objects, groups thereof, and hierarchies of (nested) groups. Each active directory install also automatically creates default container objects for information related to the database schema and the topology of the distributed active directory name space used to name individual active directory domains. There is no easy way to create new objects of class container. It can be accomplished, but it would unusual for an active directory administrator to do so, because such an object cannot have group policies applied to it. In contrast, the second kind of container, an object class known as OU, is thought of a security boundary because it can be explicitly controlled by group policies. This property makes objects of class OU the most significant structural components that active directory administrators create and use.

Continuation Reference

The LDAP searchResult might be returned by an active directory server when it holds the baseObject of a searchRequest, but is unable to search all of the entries in the scope under the baseObject (that is, when some of the entries in the scope might be held in other domains). Continuation References are non-specific in the sense that the Continuation References returned in a searchResult always list all of the immediate child domains below the domain that is generating the searchResult. Therefore, some of the domains listed in a response containing Continuation References might not hold any of the target objects. This is in contrast to referrals, which are completely specific. A referral always contains the desired baseObject of the search.

descendant domains

Refers collectively to all the domains below a specific root domain, without regard to whether they are immediate child domains of the root or are located lower in the contiguous name space. When it is important to emphasize that a domain is an immediate subordinate of the root, use the term "child domain." See also child domain.

Directory Information Tree

The DIT comprises the entire set of active directory objects deployed by an enterprise. This set forms a tree structure in the sense that each forest tree deployed by the enterprise forms a hierarchy of active directory servers whose Distinguished Names are embedded in the DNS name space, itself a tree structure. Inside each active directory server, the objects form a micro-structure of hierarchically related containers and leaf objects.

Distinguished Name

Each object in the active directory has a unique Distinguished Name. The DN identifies the domain that holds the objects as well as the complete path through the container hierarchy (in that domain) by which the object is reached.

A typical DN might be: cn=JohnSmith, cn=users, dc=widget, dc=com.

This DN identifies the "John Smith" user object in the widget.com domain. In this example, cn is an abbreviation for common name, which is an attribute. Dc is an abbreviation for domain component, which is another attribute used in active directory.

domain

A single security boundary of a Windows NT®-based computer network. Within a domain, objects and hierarchies of objects are created, according to the rules in the schema. A deployment of active directory is made up of one or more domains. On a stand-alone workstation, the domain is the computer itself. A domain can span more than one physical location by placing peer master domain controllers at more than one site. Every domain has its own security policies and security relationships with other domains. When multiple domains are arranged to form a hierarchy beneath a root domain, the domains form a contiguous name space and are collectively referred to as a domain tree. Within a domain tree, all domains are connected by mutual trust relationships and share a common schema, configuration, and global catalog. Multiple domain trees can be connected together, in terms of trust relationships, to create a forest. Each active directory host computer holds a single domain. A single computer cannot host more than one domain. There is a derivative product of active directory, known as ADAM, which does support more than one domain in a single host platform.

domain controller (pre-Windows 2000)

A Windows NT® 4.0-based server configured as a PDC or as a BDC.

domain controller (Windows 2000 and Windows Server 2003)

A Windows® 2000-based server with active directory installed and enabled. The act of installing and enabling active directory necessarily causes a platform to become a domain controller. Each domain controller holds a single domain. A single domain controller cannot host more than one domain. See also Peer Master Domain Controller.

Domain Mode

See Mixed Domain Mode, Native Domain Mode, and functional levels.

Domain Name System

The DNS is a hierarchal distributed database used for name/address translation. DNS is the name space used on the Internet to translate computer and service named into TCP/IP addresses. Active directory uses DNS as its location service, and so clients find domain controllers using DNS queries. Active directory can be used to hold the data (for example, zone and forwarding records) that constitutes the DNS database used by the DNS service running on the domain controller. When DNS records in a Domain Controller are held in its active directory database, DNS zone transfers are handled as active directory replication operations and DNS and active directory are said to be "tightly integrated."

domain tree

See domain.

domain tree root

The first domain created in a domain tree. It might not be the forest root.

forest

A group of one or more active directory domain trees that mutually trust each other. All domain trees in a forest share a common schema, configuration, and global catalog. Each tree has a root domain and zero or more descendent domains, forming a contiguous name space. When a forest contains multiple trees, the trees collectively do not form a single contiguous name space. All trees in a given forest trust each other though transitive bidirectional trust relationships. Unlike a domain tree, a forest does not need a distinct name. However, the root of the first tree created in the forest is always referred to as the root of the forest. A forest exists as a set of cross-referenced objects and trust relationships known to all member trees. See also domain and forest root.

forest root

The first domain created in an active directory deployment. After the first domain is created, additional domains can be created as child domains of that root and/or as new roots of additional trees in the same forest within an enterprise active directory deployment. See also forest, domain tree root, and domain.

functional levels (Windows Server™ 2003)

Windows Server™ 2003 expands on the domain mode concept introduced in Windows® 2000 (see Mixed Domain Mode and Native Domain Mode). Functional levels apply to both forests and domains. Like the domain mode, functional levels limit what type of operating systems can run on domain controllers in a domain or forest. Each functional level also has an associated list of features that become available when the domain or forest reaches that particular functional level. Functional levels become relevant in a domain and forest when the first domain controller running Windows Server™ 2003 is added to a domain. By default the domain functional level is set to "Windows 2000 Mixed," and the forest functional level is set to "Windows 2000." Functional levels can be set using the ADUC snap-in.

Like domain mode, after a functional level has been elevated to a higher status, it cannot be changed back.

global catalog

Contains a partial replica of every object in every domain in the forest. The GC enables users and application to find objects in the active directory forest given one or more attributes of the target object. It also contains the schema and configuration of Directory partitions. This means the GC holds a replica of every object in the active directory, but with only a small number of attributes. The attributes in the GC are those most frequently used in search operations (such as a user's first and last names, log on names, and so on). The GC enables users to find objects of interest quickly without knowing what domain holds them and without requiring a contiguous extended name space in the enterprise. The GC is built automatically by the active directory replication system. Attributes can be easily added to the GC content by active directory administrators.

interim functional level

A Windows Server™ 2003 configuration of active directory that allows it to coexist in a domain that includes one or more Windows NT® 4.0 BDCs. See also functional levels.

LDAP Display Name

The name by which LDAP clients identify a specific attribute in an abject. The LDAP Display Name is also an attribute in its own right and is a mandatory item in each active directory object. The LDAP Display Name for an attribute contains no spaces or hyphens and the first letter is always lowercase while each distinct word in the name begins with a capital letter (for example, sAMAccountName, givenName, cn, sn). The lDAPDisplayName attribute value for each object is normally made by capitalizing the first letter of each word in the Common Name, then removing the hyphens and concatenating all the words together (and making the first letter lowercase). See also attribute.

LDAP-enabled directory service

A distributed network directory service that has native support for LDAP.

Lightweight Directory Access Protocol

A protocol used to access a directory service such as active directory that has been enabled to understand the protocol. LDAP is a simplified version of the DAP developed as part of the X.500 international standard for directory services. While LDAP is certainly a computer communication protocol, the term "LDAP" is frequently used to denote more than just the protocol standard: it is inextricably tied to a default schema for the active directory database and other essential aspects of interoperability.

Mixed Domain Mode

For Windows® 2000, Mixed Domain Mode refers to a configuration of active directory that allows it to coexist in a domain that includes one or more Windows NT® 4.0 BDCs. In Mixed Mode the domain features from previous versions of Windows NT® server are still enabled, while some Windows® 2000 features are disabled. Active directory domains are installed in mixed mode by default. Nested global groups are not supported in a Mixed Mode Domain. In Mixed Mode, the active directory Domain Controller emulates the behavior of a pre-Windows® 2000 PDC when interacting with the BDCs of that domain. See also Native Domain Mode and functional levels.

NOTE: Within a multi-domain forest, running a particular domain controller in Mixed Domain Mode has no bearing in any way on any other domain. It does not matter if it is the root domain or a descendant domain, because the mode only impacts the ability of that domain to replicate data to older Windows NT® servers

in the same domain. Running a domain controller in the Mixed Domain Mode does not affect its ability to replicate and interact with Windows® 2000-based servers in other domains.

name resolution

The process of translating a name into some object or information that the name represents. Active directory forms a name space in which the name of an object in the directory can be resolved into the object itself.

name space

A name or group of names that are defined according to some naming convention. Any bounded area in which a given name can be resolved. Active directory is primarily thought of as a name space, as is any directory service.

Native Domain Mode

For Windows® 2000, Native Domain Mode refers to a configuration of active directory that allows domain controllers for a given domain to run under Windows® 2000 only. For Windows Server™ 2003, domain controllers for a given domain are allowed to run under Windows® 2000 or Windows Server™ 2003. This mode allows active directory to enable features, such as nested global groups, that are not possible under Mixed Mode operation. See also Mixed Domain Mode and functional levels.

object

An active directory object is a distinct, named set of attributes that represents something concrete, such as a user, a printer, a network console switch, or an application. The attributes hold data describing the thing that is identified by the directory object. Attributes of a user might include the user's given name, surname, and e-mail address.

object class

Each object class is a structure defined in the active directory schema and subsequently used to describe the attributes and other schema requirements associated with a particular type of object (for example, Object Class = User).

organizational unit

Each OU created in active directory is a container that is an active directory administrative boundary, controlled by group policy. OUs can contain users, groups, resources, and other OUs. An OU can be thought of as providing the administrative functionality found in Windows NT® 4.0 domains. In other words, the administrative control provided by Windows NT® 4.0 domains has been incorporated into active directory organizational units.

Peer Master Domain Controller

A domain controller is called a Peer Master Domain Controller if it a controller for a domain that has more than one domain controller. It is called a "peer master" for the domain because it can be modified (unlike BDC under the older Windows NT® 4.0 network architecture). Each peer master for a domain replicated data modifications it receives to communicate the changes to all the other peer masters in the same domain. Under the older Windows NT® 4.0 network architecture, only the PDC can be written to and the BDCs are read-only. Under active directory, every domain controller for a given domain can be written to and is responsible for replicating changes to the other Peer Master Domain Controllers for the same domain.

referral

The LDAP searchResult returned by an LDAP server when it does not hold the base Object of a search Request. A referral is specific in the sense that it always points to a server that holds the desired baseObject (this is in contrast to Continuation Reference, which are non-specific in the sense that the Continuation References returned in a searchResult always list all of the immediate child domains below the domain that is generating the searchResult. Therefore, some of the domains listed in a response containing Continuation References might not hold any of the target objects).

Relative Distinguished Name

This is a term used extensively in the X.500 standards to denote the name used to uniquely reference an object relative to its parent container and the domain that holds the object. In Microsoft active directory, the term "RDN" is rarely used explicitly, but the concept is frequently used. It is instantiated by the rDNAttID attribute. For the object classes person, computer, and group, the value of rDNAttID is set to cn. Similarly, for the object class organizationalUnit, the value of rDNAttID is set to OU. For example, if a person distinguishedName of an object is: cn=John Smith,cn=users,dc=widget,dc=com, then that RDN is: cn=John Smith.

Note that in this example, the RDN appears to be the concatenation of two attribute values: the user's givenName and his surname (sn). However, in the default Microsoft® active directory schema, an object of class person uses the displayName attribute value as the value of the RDN of the object. In the example of John Smith, when the administrator created the user account, the Logon Name was set to JohnSmith. The Logon Name gets stored in the attribute named sAMAccountName. Note that "Logon Name" is what the field is called in the ADUC interface. Similarly, the fields in the ADUC interface labeled "First Name" and "Last Name" are stored in the attributes names givenName and sn, respectively, as well as in displayName. In Microsoft active directory, for objects of class person, Common-Name (cn) and Display-Name (displayName) get assigned the same value.

root domain

A domain that is not a child domain of any domain in the forest. A root domain can have child domains. Each root domain might be a forest root. Each forest has only one root domain. See also domain tree root and forest root.

SAM Account Name

See Relative Distinguished Name.

schema

The rules used to control the structure of active directory data within a domain. The schema defines the object classes that can be used to create objects in a domain. For each object class, the schema defines exactly what attributes an instance of that class must have, what additional attributes it might have, and what object class can be its parent within nested hierarchies. Within an active directory forest, all domains have the same schema. How objects may be arranged in hierarchal relationships within a domain is left to the discretion of each vendor selling an LDAP-enabled Directory Service product. The default hierarchies allowed by each vendor are controlled by that vendor's default schema.

subdomains

See descendant domains.

tree depth

Refers to the number of generational levels in a specific subtree of a specific domain. For a given forest, the forest root domain is said to be at Tree Depth = 1. The immediate child domains of the forest root, if

any, are said to be at Tree Depth = 2, and similarly for subsequent generation below the immediate child domains of the forest root. A forest may have more than one tree (that is, more than one root domain), although only one of them is known as the forest root. Each root domain in a forest is said to be at Tree Depth = 1. The schema fr numbering tree depth is the same for all trees in a forest. It is the same as for the tree whose root is the forest root domain.

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